

2.—*The Blenniidæ of South Africa* —By J. D. F. GILCHRIST, M.A.,  
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THE Blenniidæ (*Blennies*, or *Klipfish*) of South Africa, though comparatively abundant and easily procured, are very imperfectly known. Those that have been described are often so insufficiently characterised that they cannot with certainty be identified, due also in a large measure to the procuring of isolated specimens and the description of unimportant characters.

The following review of this family of fish in South African waters is based on collections made at Walwich Bay by Mr. Scully, at East London by Mr. Brooking and Mr. J. Wood, at Natal by Mr. Romer Robinson, and at various places by the authors.

The most prominent feature is the presence of numerous species of the genus *Clinus*, there being 22 species as contrasted with 16 of all the other genera of the Blenniidæ represented here. Of the nine known species we have been able to identify eight with a fair amount of certainty, and to draw up a revised description of these from an examination of numerous specimens. The one species of which we have not yet found a specimen is *C. heterodon*, and Valenciennes, original description of this is merely abstracted. Twelve new species and one new variety are now described; most of them are well characterised, but in the case of two (*Clinus superciliosus* var. *arborescens*, and *Clinus ornatus*) it was only after an examination of many specimens that we found it necessary to separate them from *Clinus superciliosus*.

The distribution of this genus (*Clinus*) is also of interest, the species representing it being much more abundant in the colder waters of the Cape Peninsula and West Coast. Only one species has been found, by Mr. Robinson, in Natal, though he readily procured specimens of *Blennius*, *Salarias*, &c. From personal examination of such localities as the Cape Peninsula and Durban we have found that this is a most striking feature of the marine fauna, various species of *Clinus* occurring in almost every rock-pool

of the first-named locality, and species of *Blennius* and *Salaria*s occurring as abundantly at the latter.

We have found that a natural division of the genus *Clinus* may be made into those with a distinct but not separate crest, and those without one. Ogilby (Proc. Linn. Soc. N.S. Wales X., 1885, p. 226) has suggested the generic name *Petraites* for species in which "the third dorsal spine is connected to the basal portion of the first spine of the second dorsal," and the name *Clinus* for those in which the third spine "is connected to the middle or upper half of the first spine of second dorsal." In our South African species, however, it is found that the height at which the connecting membrane of the crest is attached to the fourth spine is not constant, varying from a fourth or fifth to a half in individuals of the same species (*Clinus superciliosus*); under these circumstances it seems preferable—whilst retaining for the present the genus *Clinus* in the text as including both forms—to keep this name for the crested form and to group the non-crested under another genus, for which we suggest the name *Clinoides*. We retain the name *Cristiceps* for those forms in which the first dorsal is distinctly separate from the second, the membrane not being joined on to the second; and this irrespective of the position of the first dorsal spines with reference to the eye.

#### FAMILY BLENNIIDÆ.

Body elongate, generally low and more or less cylindrical; naked, or covered with moderate sized or small scales which are etenoid or cycloid; lateral line variously developed, wanting, or duplicated; mouth large or small, teeth various. Dorsal fin occupying nearly the whole of the back and sometimes joined to the caudal; formed either wholly of spines, or of spines and soft rays, or of soft rays alone. Anal fin long, similar to soft dorsal, with or without anterior spines, and sometimes joined to caudal. Ventral fins jugular or sub-thoracic, usually formed of one hidden spine and from one to three soft rays, which are sometimes divided. Caudal fin well developed. No bony stay to sub-orbitals which often have a shelf. Scapula perforate.

Fishes of moderate or small size generally found about the fore-shore, though some are known to inhabit deeper water. Mostly carnivorous and oviparous; the genus *Clinus*, however, is mostly viviparous.

*Synopsis of the Genera described.*

(a) Spinous and soft portions of dorsal fin of nearly equal extent.

1. Body naked. Jaws with a single series of immovable teeth and generally a posterior canine on one or both jaws. Gill opening wide . . . . . BLENNIUS.
2. Body naked. Jaws with a single series of immovable teeth and a strong curved posterior canine on each side. Gill opening reduced to a small foramen above root of pectorals. Dorsal fin low . . . . . ASPIDONTUS.
3. Closely allied to *Aspidontus*, but dorsal fin with anterior spines elevated . . . . . PETROSCIRTES.
4. Jaws with a series of numerous small movable teeth implanted in the gum, with or without posterior canines. Dorsal single, and with or without a notch. Gill opening wide . . . . . SALARIAS.

(b) Dorsal fin or fins composed chiefly of spines with a few posterior rays.

5. A single dorsal fin composed of many spines and one or more soft rays. Teeth in a narrow band or cluster, or a single series often with a band or cluster of smaller teeth behind them, on each jaw: teeth on vomer . . . . . CLINUS.
6. Two dorsal fins, the anterior composed of three spines . . . . . CRISTICEPS.
7. Three dorsal fins, the two anterior being spinous . . . . . TRIPTERYGIUM.

BLENNIUS, L.

Body moderately elongate, naked. Snout short; profile of head bluntly rounded; cleft of mouth small, horizontal. A single series of slender, curved, close-set, immovable teeth on each jaw, with a curved canine on each side of both jaws or of the lower jaw only. Gill-opening wide. Tentacles above the orbits more or less developed, sometimes absent. Dorsal fin entire, with a more or less pronounced notch between the spinous and soft portions. Ventrals jugular, formed by a hidden spine and two rays, the latter split into two, well developed. Pectorals moderate. Lateral line developed anteriorly.

BLENNIUS BIFILUM, Günth.

*Blennius bifilum*, Günth., iii., p. 225.

No curved posterior canines. Depth of body equals length of head and is  $4\frac{3}{4}$  times in total length excluding caudal. Distance from eye to point of snout  $1\frac{1}{3}$  times diameter of eye, which is  $3\frac{2}{3}$  times in length of head and  $1\frac{1}{2}$  times interorbital width; depth

of caudal peduncle about 2 to  $2\frac{1}{2}$  times in length of head. No orbital tentacles, but there is a pair of slender tapering filaments on the nape; interorbital space depressed in centre; snout very obtuse, with anterior profile abruptly descending; upper lip thick and projects beyond lower, maxillary reaches barely to vertical of anterior margin of orbits; eyes prominent and placed high in the head, bulging at interorbital space.

Dorsal xi 18; commences over posterior border of operculum and does not quite reach base of caudal; soft-rayed portion higher than spinous, a notch between spinous and soft dorsal. Pectorals 14; slightly longer than head and reach to vertical of origin of anal, pointed, middle rays longest. Ventrals 12; about  $\frac{1}{2}$  length of head. Anal 20; 1st ray short, remainder about the height of spinous dorsal, membranes incised. Caudal nearly as long as head, truncate, rays divided. Lateral line tubes only apparent anteriorly where the lateral line is arched over the pectorals.

Colour (of preserved specimens), grey, seven or eight transverse dark bands cross body, extending partly on to fins; dorsal with dull brown dots, also on caudal, where they form cross bands; scattered over the body more or less distinctly are small circular or oval areas devoid of pigment and sometimes bordered by a dark circle.

Four specimens, 43 mm., 51 mm., 53 mm., 55 mm. in length, respectively, from Mr. Robinson, Natal.

#### BLENNIUS CORNUTUS, L.

(Bijter.)

*Blennius*, sp. Gronov. Zoophyl., n. 264.

*Blennius cornutus*, L. Amœn. Acad., 1, p. 316, and Mus. Ad. Fried., p. 161; Bl. Schn., p. 169; Gronov. Syst. Ed. Gray, p. 95; Günth., iii., p. 213.

*Blennius grandicornis*, Cuv. and Val., xi., p. 258.

A strong slightly-curved canine on each side of lower jaw, a slightly smaller one on each side of upper [in one specimen one side of the lower jaw had 2 canines]. Depth of body  $3\frac{1}{2}$  to 4 times in total length excluding caudal, length of head  $3\frac{3}{4}$  to 4 times. Distance from eye to point of snout about twice interorbital width and  $1\frac{2}{3}$  to  $1\frac{1}{2}$  times diameter of eye, which is  $4\frac{1}{2}$  to 5 times in length of head; depth of caudal peduncle  $2\frac{1}{2}$  to  $3\frac{1}{3}$  times in length of head. A tapering filament, longer in the males than the females, with a group of shorter filaments springing from its base on each side is situated on upper posterior angle of each eye, and the anterior nostril has a

fringed tentacle or flap; interorbital space concave; a deep transverse groove behind orbits, which are prominent and placed high up: anterior profile of head descends abruptly, snout obtuse, giving a somewhat swollen appearance to the throat; upper lip overhangs lower, maxillary reaches to vertical of anterior third or middle of orbits. Mucous pores on head and shoulders; and the arched portion of the lateral line is formed by two rows of pores, which are sometimes apparent as a single row posteriorly.

Dorsal xii 17-20; slightly emarginate, commences about in line with posterior margin of preoperculum, not joined to caudal; spines weak, the anterior ones curved backwards in their upper half and  $\frac{2}{3}$  to  $\frac{1}{2}$  length of head; a well-defined notch between spinous and soft-rayed portions, the latter being about equal to or a little higher than the spinous portion. Pectorals 14, oval in outline, middle rays longest and  $\frac{7}{10}$  to  $\frac{9}{10}$  length of head, membranes incised. Ventrals i 2;  $\frac{1}{2}$  to  $\frac{2}{3}$  length of head. Anal ii 19-21; in the males the spines are tuberculous, in the females the 1st spine is not always apparent and there are no tubercles; soft rays not so high as those of soft dorsal, membranes incised. Caudal slightly rounded, inner rays divided, about  $\frac{3}{4}$  length of head.

Colour (alive), dark, with shades of lighter brown or faint bars on body; a black margin to anal, lower rays of pectorals pinkish; tentacles over eyes light red, grey, &c.; thoracic and abdominal region white or light coloured; a tinge of yellow and pink on body and fins.

Colour (of preserved specimens), light brown, head and margin of anal black; sometimes faint marbling on body.

Four specimens, 84 mm., 93 mm., 103 mm., 107 mm. in length respectively, from Kalk Bay.

#### BLENNIUS CRINITUS, C. and V.

*Blennius crinitus*, Cuv. and Val., xi., p. 237; Guichen, Explor. Algér. Poiss., p. 72; Günth., iii., p. 224.

A little Blenny remarkable for the number of filaments which it bears on its brows and nape: above each eye there are 3 small ones, and in a longitudinal line extending from the interorbital space nearly to the base of the dorsal there are 10 or 11, of which the longest is about  $\frac{1}{2}$  the height of the head; there are apparently no nasal tentacles. The profile of the head descends rapidly. There are about 30 fine teeth on each jaw; no canines, or with very small ones posteriorly. The head, almost as high as long, is about

$4\frac{1}{2}$  times in the total length. The dorsal is slightly emarginate above the 11th spine, which is about  $\frac{1}{2}$  the length of the others; it is joined to the back before the caudal. The two first spines of the anal are tuberculous. Pectorals  $\frac{1}{2}$  length of body; ventrals  $\frac{1}{8}$  the length of body.

D. xii 14; A. ii 16-18; C. 15; P. 16; V. 1 2.

The colour when fresh appears to be green with brown shades; ends of filaments on nape are brown and white, and less markedly the dorsal spines, with a round black spot between 1st and 2nd spine; anal has a black border and the extremities of the rays white.

#### BLENNIUS CAPITO, C. and V.

*Blennius capito*, Cuv. and Val., xi., p. 260; Günth., iii., p. 215.

This species is marked by the curved portion of the lateral line being formed anteriorly by a double row of pores, with a single row for the rest of its length. Its profile very abrupt, which causes the swelling of the throat to be more apparent. There is a very marked transverse depression on the head behind the eyes. A soft skin, loose and spongy, envelops and nearly hides the dorsal and anal: head  $4\frac{3}{4}$  times in total length, it is notably almost as broad as high. There are 36 or 38 teeth in each jaw; no canines, or at least only a very small one posteriorly, scarcely distinguishable from the other teeth. The length of the ventrals is nearly 9 times in that of the body. The dorsal is joined to the back before the caudal, which is not longer than the ventrals. The two fungiform tubercles are very pronounced. There are several well-marked pores on the cheek.

D. xiii 19; A. 23, &c.

In preservative it appears of a blackish brown, paler on the belly, and several whitish tints are apparent in the form of marbling, &c.

The species is large for the genus—7 or 8 inches.

NOTE.—Günther describes the superciliary margin as swollen, with a short fringed tentacle posteriorly.

#### BLENNIUS CASTANEUS, Cast.

*Blennius castaneus*, Cast. Mem., p. 50.

Very near to *B. capito* of Cuv. and Val., but the lateral line is crossed on its anterior portion by a certain number of small transverse incisions, and behind the curve the line is formed of a simple series of strong and isolated points.

The colour is a uniform chestnut, even that of the eyes. There are rows of pores round the eyes.

D. xi 16; A. 19; C. 13; P. 14; V. 2.

Total length, 90 mm.

This species differs from *B. capito* in the construction of the lateral line, and the number of rays in the fins; it was sent from Algoa Bay by Mr. Chabaud.

BLENNIUS SCULLYI, n. sp.

A single large curved tooth on either side of each jaw, those on the upper jaw smaller than those on the lower. Depth of body equals length of head, and is about  $3\frac{3}{4}$  times in total length excluding caudal. Distance from eye to point of snout  $1\frac{5}{8}$  times diameter of eye, which is  $4\frac{3}{4}$  times in length of head; interorbital width  $\frac{3}{4}$  diameter of eye; depth of caudal peduncle  $3\frac{1}{8}$  times in length of head. A single filament, with shorter ones springing from its base, over each eye; a tentacle on anterior nostril; interorbital space with a longitudinal groove; a transverse groove behind orbits; snout obtuse, the anterior profile abruptly descending; upper jaw overhangs lower, maxillary reaches to vertical of anterior third of orbits; eyes prominent.

Dorsal xii 19; commences in line with posterior margin of preoperculum, continuous but not joined to caudal; spinous portion rather lower than soft-rayed, with a notch between them caused by shortening of posterior spines; the last soft ray divided. Pectorals 14; broad and pointed, nearly  $\frac{3}{4}$  length of head, reach to anal. Ventrals i 2; about  $\frac{1}{2}$  length of head, rays divided and enclosed in membrane nearly their whole length. Anal ii 21; rays slightly thickened at extremities, shorter anteriorly, membranes slightly incised. Caudal slightly rounded,  $\frac{7}{10}$  length of head.

Colour (of preserved specimen), light greyish brown, mottled; a dark patch on membrane between 1st and 2nd dorsal spines.

A single specimen, 70 mm. in length, from Mr. Scully, Walwich Bay, after whom it has been named.

BLENNIUS OCELLATUS, n. sp.

No large curved teeth in jaws. Depth of body  $3\frac{1}{2}$  to 4 times in total length excluding caudal, length of head  $3\frac{3}{4}$  to  $4\frac{1}{4}$  times. Distance from eye to point of snout equals diameter of eye, which is about  $3\frac{1}{2}$  times in length of head; interorbital width  $\frac{2}{5}$  diameter of eye; depth of caudal peduncle  $2\frac{2}{3}$  to  $2\frac{3}{4}$  times in length of head. A long filament over the centre of each eye, sometimes divided at the extremity, with a cluster of short filaments branching off its base generally in the rear; interorbital space with a longitudinal

groove; profile of snout almost vertical, upper lip very slightly overhanging lower, cleft of mouth small and lateral, maxillary reaches to vertical of anterior third or middle of orbits; eyes placed high up and to the front. A series of mucous pores round orbits, a row along posterior and lower margins of preoperculum, and a row on each side of arch of lateral line.

Dorsal xii 21; commences a little behind posterior margin of preoperculum and reaches to about base of caudal; spinous and soft-rayed portions about equal in height,  $\frac{2}{3}$  length of head, with a very slight notch between them caused by shortening of last spine and first ray; soft rays and posterior spines are slightly tuberculose at their extremity. Pectorals 14; oval and slightly pointed, about  $\frac{9}{10}$  length of head. Ventrals 1 2; about  $\frac{1}{5}$  length of head. Anal 11 21; spines with a pronounced tubercle on each, extremities of rays slightly tuberculose; a minute tubercle between 1st spine and anus. Caudal slightly rounded, rays split at the extremity, about  $\frac{3}{4}$  length of head. Lateral line a double row of openings only visible anteriorly.

Colour, light yellowish brown or grey, with broad dark cross-bands, and a dark spot on dorsal between the 3rd and 5th dorsal spines over the band behind the pectorals.

Two specimens, 68 mm. and 61 mm. in length respectively, obtained by the *Pieter Faure* (s.) in False Bay; the larger caught in the dredge, in 9 fms., about 1 mile off Zwartklip, the smaller (grey one) in the shrimp trawl, in 14 fms., about  $2\frac{1}{2}$  miles off Seal Island.

The species is distinguished from *B. capito* by the absence of the transverse groove behind tentacles, ocellated spot on dorsal, &c.

NOTE.—After this paper was in print we received a copy of a paper by Mr. Tate Regan describing a collection of fishes made by Dr. Warren. One of his new species (*Salarias kosiensis*) corresponds closely to a species which we had described as new, and we substitute his prior name. He also describes a new species of Blennius (*B. punctifer*), specimens of which we have not yet procured: his description of this species will be found on p. 141.

#### ASPIDONTUS, Cuv.

Body elongate, naked. Mouth small, with a single row of immovable teeth in each jaw and a strong curved canine on each side, those of the lower jaw much stronger than those of the upper. Gill-opening closed beneath and reduced to a small foramen above



the root of the pectorals. Dorsal fin low, the anterior spines not elevated. Ventrals jugular, composed of from 2 to 4 rays.

ASPIDONTUS WOODI, n. sp.

Canine teeth strong, especially in lower jaw. Depth of body about equals length of head, and is  $5\frac{7}{10}$  times in total length excluding caudal. Distance from eye to point of snout  $1\frac{1}{3}$  times diameter of eye, which equals interorbital width and is  $4\frac{2}{3}$  times in length of head. No orbital tentacles, but there is a crest on the head twice the diameter of the eye in height and extending from above anterior margin of orbits to nape; snout obtuse and projecting slightly beyond mouth; upper jaw longer than lower and upper lip overhangs; mouth small and cleft slightly oblique, maxillary reaches to vertical of anterior third of orbits; eyes placed high up and with a row of pores round their posterior margin; a large pore below mandibles at each corner of mouth.

Dorsal xii 20; commences in line with opercular border and extends to base of caudal, spines weak; 1st spine  $\frac{2}{3}$  length of head, remainder successively lengthening, the last spine being  $\frac{1}{3}$  higher than the first. Membranes of soft rays slightly notched, ends of rays filamentous, longest ray about  $1\frac{1}{2}$  times length of head. Pectorals 13; slightly longer than head. Ventrals 12; about  $\frac{2}{3}$  length of head. Anal 21; low anteriorly, rising to about  $\frac{1}{3}$  length of head, membranes slightly emarginate. Caudal about  $1\frac{1}{2}$  times length of head, broad and rounded. Body elongate and slightly compressed, its depth varies very slightly for the greater part of its length; depth of caudal peduncle more than  $\frac{1}{2}$  the greatest depth of the body. Lateral line indistinct.

Colour (of preserved specimen) brown, with about a dozen dark transverse curved bars on body; no spots.

A single specimen, 80 mm. in length, from Nahoon River; sent by Mr. J. Wood, after whom it is named, and who has collected many specimens of marine animals.

PETROSCIRTES, Rüppell.

This genus is closely allied to *Aspidontus*, differing chiefly in the elevated dorsal fin, the anterior spines being much higher than the others.

? PETROSCIRTES FILAMENTOSUS, C. and V.

*Blennechis filamentosus*, Cuv. and Val., xi., p. 280, pl. 326.

*Petroskirtes rostratus* (Solander), Bleek, Act. Soc. Sc. Indo-Nederl., ii., Amboina, p. 62.

*Petroskirtes filamentosus*, Günth., iii., p. 231.

No canines in upper jaw, those of lower jaw strong. Depth of body 5 times in total length excluding caudal, nearly  $5\frac{2}{3}$  with caudal; length of head 4 times excluding,  $4\frac{2}{3}$  times with caudal. Distance from eye to point of snout  $1\frac{1}{2}$  times diameter of eye, which is  $1\frac{1}{3}$  times in interorbital width and  $4\frac{2}{3}$  times in length of head; depth of caudal peduncle  $2\frac{1}{3}$  times in length of head. No orbital tentacles or crest on head; snout produced and conical, projecting much beyond cleft of mouth, which is lateral; upper jaw projecting beyond lower, mouth inferior, maxillary reaches to vertical of anterior margin of orbits.

Dorsal xxxvi.; commences in line with posterior margin of preoperculum and extends nearly to caudal; anterior spines elongate and filamentous, about the length of the head. Pectorals 14; pointed, lower rays longest and nearly  $\frac{2}{3}$  length of head. Ventrals 3; the 3rd ray very short and weak, the others filamentous and  $\frac{1}{3}$  length of head. Anal 26; 1st ray short, 2nd about  $1\frac{1}{2}$  times as long, remainder subequal and  $\frac{2}{10}$  length of head; membranes slightly incised. Caudal about  $\frac{7}{10}$  length of head, with a vertical margin and notched.

Colour (of preserved specimen) uniform brown, a dark horizontal band through the eye and extending on to the body, large dark brown patches on anterior crest of dorsal and at intervals behind it.

One specimen, 54 mm. in length, procured by the ss. *Pieter Faure* in St. Lucia Bay.

#### SALARIAS, Cuv.

Body moderately elongate, naked. Snout short. Cleft of mouth transverse. Tentacles above orbits more or less developed. A row of small movable teeth in the gums generally with a posterior curved canine on each side of lower jaw. Dorsal single, sometimes divided by a more or less deep notch between the spinous and soft-rayed portions. Ventrals jugular, formed by a small hidden spine and from two to four rays. A crest on the head in many cases, but in some species this has been found to be confined to the males. Gill-openings wide.

This genus includes the species classified by Jordan and Everman under *Entomacrodus*, having canine teeth, and *Scartichthys*, without canines, in both of which the dorsal fin is divided by a notch.

## SALARIAS KOSIENSIS, Regan.

*Salaris kosiensis*, Regan, Ann. Nat. Gov. Museum, vol. 1, pt. 3, p. 254.  
(Blue Blenny, Yellow Blenny.)

A strong canine on each side of lower jaw. Depth of body  $3\frac{1}{10}$  to  $3\frac{2}{5}$  times in total length excluding caudal, length of head  $3\frac{2}{5}$  to 4 times. Distance from eye to point of snout  $1\frac{1}{2}$  times to nearly twice diameter of eye, which is  $4\frac{5}{8}$  to  $5\frac{1}{4}$  times in length of head; interorbital width  $\frac{7}{8}$  to  $1\frac{1}{8}$  diameter of eye; greatest depth of head equals its length and slightly exceeds its greatest breadth; depth of caudal peduncle  $2\frac{1}{5}$  to 3 times in length of head. Snout obtuse, projecting slightly beyond mouth; upper lip thick and overhangs lower, maxillary reaches to vertical of middle or posterior third of orbits; a simple tentacle over the centre of each eye the length of which seems to vary, ranging from  $\frac{1}{4}$  to about  $\frac{3}{4}$  length of head; a bunch of tentacles at anterior nostril; a row or fringe of closely set plain tentacles about  $\frac{1}{2}$  diameter of eye in length across nape, with a transverse groove between it and the origin of the dorsal fin; cheeks very swollen.

Dorsal xi 11-12; commences slightly in front of base of pectorals and reaches nearly to caudal; spines weak, the 1st bent backwards at about  $\frac{1}{3}$  its height and from  $\frac{1}{3}$  to  $\frac{1}{2}$  length of head; succeeding spines shorter posteriorly and the connecting membrane of last spine is attached low down on the first soft ray, forming a deep notch between the spinous and soft-rayed portions of the fin, the soft-rayed portion being higher than the spinous, the longest rays being about  $\frac{1}{2}$  to  $\frac{2}{3}$  length of head. Pectorals 15; broad and pointed, middle rays longest and about  $\frac{3}{4}$  to 1 in length of head. Ventrals 1 2-3; fleshy,  $\frac{1}{2}$  to  $\frac{2}{3}$  length of head. Anal ii 13-14; spines tuberculose, sometimes very small; soft portion of fin lower than soft dorsal, membranes deeply incised. Caudal rounded or truncate, middle rays split, about  $\frac{2}{3}$  length of head. Scales of lateral line enlarged on arch, which is low.

Colour (of preserved specimens). Apparently there are two types of colour, the one a dark bluish shade, the other yellow or yellowish brown; 3 or 4 indistinct bars across the body, head and shoulders are covered with numerous small dark spots, which are continued above arched portion of lateral line and below dorsal. The yellow variety, especially, shows many light-coloured spots on body and vertical fins.

Six specimens, ranging in length from 126 mm. to 155 mm., from Mr. Robinson, Natal. Except in regard to colour they closely

resemble each other, the chief difference being the disparity in length of the orbital tentacles.

SALARIAS QUADRICORNIS, C. and V.

*Salaria quadricornis*, Cuv. and Val., xi., p. 329, pl. 329; ? Jenyns, Zool. Beagle, Fishes, p. 87; Günth., iii., p. 255; Kner, Novara Fische, p. 197; Klunz, Verh. z. b. Ges. Wien, 1871, p. 489.

*Erpichthys quadricornis*, Swainson, Fishes, ii., p. 275.

No canine teeth. Depth of body equals length of head and is  $4\frac{2}{3}$  to 5 times in total length excluding caudal. Distance from eye to point of snout 1 to  $1\frac{1}{3}$  times diameter of eye, which is 3 to  $3\frac{1}{2}$  times in length of head; interorbital space concave and  $\frac{1}{2}$  to  $\frac{1}{3}$  diameter of eye; depth of caudal peduncle slightly more than  $\frac{1}{2}$  length of head. A short simple tentacle about  $\frac{1}{2}$  diameter of eye in length above each orbit, a similar one on each side of nape, and a cluster of cirri on anterior nostril; head blunt, anterior profile nearly vertical; snout blunt and projecting above mouth, upper lip overhangs lower, cleft of mouth lateral, maxillary reaches to vertical of posterior margin of orbits; eyes placed high up and far forward.

Dorsal xii 20; commences above posterior margin of operculum and extends to caudal, being joined to lower fourth of upper ray of caudal by a membrane. Spinous portion not quite so high as the soft, which is about  $\frac{1}{3}$  the depth of the body, and with a notch between spines and rays caused by shortening of posterior spines. Pectorals 14; slightly longer than head, broad, lower rays incised. Ventrals 1 2-3;  $\frac{3}{4}$  length of head. Anal 23; lower anteriorly, increasing to about height of spinous dorsal, membranes deeply incised, extremities of rays free. Caudal as long or a little longer than head, rounded, middle ray longest and divided at end. Lateral line distinct anteriorly, becoming very indistinct in posterior third of length. Body naked.

Colour (of preserved specimens), purplish brown, with irregular transverse bars in pairs on body, tips of anal white.

Three specimens, 42 mm., 97 mm., 115 mm. in length respectively, from Mr. Robinson, Natal; found in pools on Natal coast.

SALARIAS BARBATUS, n. sp.

No canine teeth. Depth of body  $5\frac{1}{6}$  to  $5\frac{2}{3}$  times in total length excluding caudal, length of head about  $5\frac{1}{3}$  times. Distance from eye to point of snout  $\frac{2}{3}$  to  $\frac{7}{10}$  diameter of eye, which is about twice the interorbital width and  $3\frac{1}{2}$  to 4 times in length of head. Depth

of caudal peduncle 2 to  $2\frac{1}{2}$  times in length of head. Superciliary margin slightly swollen with a short fringed tentacle above each orbit; interorbital space concave; snout almost vertical, with a patch of hairlike filaments or cirri on upper lip and a few smaller ones on the lower; maxillary reaches to vertical of posterior margin of orbits, upper lip overhangs lower.

Dorsal xii 21; commences in line with posterior margin of operculum, notched, and is joined to base of caudal by a short membrane. Spines weak and slightly lower than rays; spinous portion slightly higher in centre and separated from soft portion by a deep notch caused by shortening of posterior and especially last spine. Pectorals 14; slightly longer than head, broad and pointed. Ventrals 12;  $\frac{3}{4}$  to  $\frac{1}{2}$  length of head. Anal 22; slightly less in height than soft dorsal, membranes incised. Caudal slightly longer than head, rounded, rays divided at extremities. Lateral line very indistinct.

Colour (of preserved specimens), body with a few indefinite transverse streaks anteriorly and with black spots posteriorly; spinous dorsal with black spots arranged in horizontal lines, soft dorsal with black spots in lines passing backwards and upwards.

Two specimens, 60 mm., 62 mm. in length respectively, from Mr. Robinson, Natal; caught in bathing pool at Bluff, Durban.

#### SALARIAS DUSSUMIERI, C. and V.

*Salaria dussumieri*, Cuv. and Val., xi., p. 310; Jerdon, M.J.L. and Sc., 1851, p. 144; Günth., Catal., iii., p. 251; Playfair, Fish. Zanz., p. 77, pl. ix., f. 6, 7.

? *Salaria striato-maculatus*, Kner. and Steind., Sitz. Ak. Wiss. Wien., 1866, liv., p. 368, f. 4.

No canine teeth. Depth of body equals length of head and is 5 to  $5\frac{1}{2}$  times in total length excluding caudal. Distance from eye to point of snout equals diameter of eye, which is twice interorbital width and  $3\frac{1}{4}$  to  $4\frac{1}{3}$  times in length of head; depth of caudal peduncle nearly  $\frac{1}{2}$  length of head. A crest-like flap about  $\frac{1}{2}$  diameter of eye in height on head from interorbital space to neck, a many-fringed tentacle above each orbit and one on anterior nostril; head blunt, profile of snout almost vertical; upper lip thick and overhanging lower, maxillary reaches beyond vertical of posterior margin of orbits; eyes prominent, placed high up and far forward.

Dorsal xiii 20-22; originates above base of pectorals and reaches to base of caudal, to which it is joined by a membrane, a notch between spinous and soft-rayed portions caused by shortening of

posterior spines. The spines are weak and flexible, about subequal to the 5th, from which to the 9th they are slightly longer and about  $\frac{3}{5}$  length of head, the last 3 spines successively shorten; soft portion of fin higher than the spinous, the 1st ray slightly lower than succeeding ones, which are about  $\frac{1}{2}$  length of head. Pectorals 14; rounded, about length of head, lower rays incised. Ventrals 13; about  $\frac{3}{5}$  length of head, 3rd ray minute. Anal 25-26; first 2 rays very small, remainder about height of longest dorsal spines, membranes deeply incised. Caudal broad and rounded, inner rays divided at end and the middle ones longest, about length of head.

Colour (of preserved specimens), brown, body crossed by numerous dark lines which here and there become broad and fuse, forming irregular dark bands across the body; spinous dorsal with dark marks forming parallel horizontal lines, a black spot behind top of first spine, margin of soft dorsal spotted, dark line over the fin passing upward and backwards from head, dark spots on upper half of caudal.

Six specimens, ranging in length from 63 mm. to 83 mm., from Mr. Robinson, Natal.

#### CLINUS, Cuv.

Carnivorous fish living generally amongst the rocks and seaweed on the littoral, and in some cases on rocky banks in deeper water; generally viviparous; mostly of small size, ranging from 3 or 4 inches to 12 or 14 inches in length. Some species are very abundant in South African waters, and many of them are of excellent flavour and much esteemed for the table.

Body elongate and usually covered with small scales more or less deeply embedded in the skin. Teeth either in a single series or as an outer row with a band or clusters of smaller teeth behind; usually a curved band on vomer. Eyes generally placed high on the head and more or less movable in all directions like a chameleon's. With or without orbital tentacles. Dorsal fin continuous, extending the whole length of the back and sometimes joined to the caudal; consisting of many spines and one or more soft rays. Sometimes the first three spines form a more or less elevated crest, a little removed from but joined to the succeeding spines. Anal fin with two spines and many soft rays. Ventrals with one spine hidden in the skin and two or three soft rays. Colour uniform or in many shades and patterns.

Key to South African Species.

(a) WITH DORSAL CREST.

(1) With orbital tentacles.

1. Anterior crest high—in males falciform, from  $\frac{2}{5}$  to  $\frac{4}{5}$  length of head in height; in females more rounded,  $\frac{1}{3}$  to  $\frac{1}{2}$  length of head. Orbital tentacles a more or less flattened stalk divided, short-fringed, or indented, of dark colour. D. iii xxx-xxxviii 5-9, A. ii 25-30, V. i 2 . . . . . *C. superciliosus.*
2. Crest lower and triangular, about the same in both sexes. Orbital tentacles a rounded tapering stalk with a long fringe, often branched, and usually of a light colour. D. iii xxxiii-xxxvii 5-7, A. ii 26-29, V. i 2 . . . . . *C. superciliosus,*  
var. *arborescens.*
3. Crest more or less fan-shaped, with slender flexible spines. Snout obtuse. D. iii xxx-xxxiii 6-8, A. ii 25-28, V. i 2 . . . . . *C. ornatus.*
4. Crest lower than last spine of dorsal, separated from remainder of fin by a deep notch, the membrane joined to the base of 4th spine; a shallow transverse depression behind orbits; eyes placed high up and slightly directed upwards. Scales distinct and comparatively large. D. iii xxxii 5, A. ii 23, V. i 3 . . . . . *C. brevicristatus.*

(2) No orbital tentacles.

5. Crest low; succeeding spines grouped in twos and threes, the membranes connecting groups generally transparent. Caudal peduncle long and slender. D. iii xxiii-xxiv 3-4, A. ii 15-17, V. i 3 . . . . . *C. mus.*
6. Crest not much elevated, semi-detached, the connecting membrane attached low down on 4th spine. D. iii xxvii-xxviii 4-5, A. ii 21-22, V. i 3 . . . . . *C. laurentii.*
7. Dorsal more or less undulating, crest rounded and elevated. Snout short and up-turned. Often with a silvery spot behind pectorals. D. xxviii-xxix 5-6, A. ii 19-21, V. i 3 . . . . . *C. fucorum.*
8. Crest not much elevated, 3rd spine a little removed from 2nd and still further from 4th. First soft rays remote from last. D. xxxi-xxxv 3, A. ii 20-22, V. i 3 . . . . . *C. pavo.*

(b) NO DORSAL CREST.

(1) With orbital tentacles.

9. Dorsal low anteriorly, spines erect and increasing in height posteriorly; soft part of fin more elevated than spinous. Snout sub-conical. D. xxxi-xxxiii 5-7, A. ii 21-22, V. i 2-3 . . . . . *C. acuminatus.*

10. A transverse groove behind orbits, head rounded. Eyes prominent and with a pronounced ridge over them. D. xxxii-xxxiv 4-6, A. ii 21-24, V. i 2-3 . . . . . *C. cottoides*.
11. Dorsal with membranes of anterior spines notched, especially between 3rd and 4th spines. A transverse groove behind orbits. Orbital tentacles very pronounced and heavily fringed. Aspect fierce. D. xxxii-xxxv 5-6, A. ii 22-24, V. i 3 . . . . . *C. taurus*.
12. Dorsal low in anterior third, subequal posteriorly; soft rays nearly twice as high as spines. A slight transverse groove behind orbits. Posterior nostrils prominent. D. xxxiv 9, A. ii 26, V. i 3 . . . . . *C. latipinnis*.
13. Anterior spines of dorsal erect and strong, further apart individually, especially the 3rd and 4th, the remainder generally subequal. Soft rays more elevated than spines. Lips with perpendicular corrugations. D. xxxii-xxxiv 10-14, A. ii 27, V. i 3 . . . . . *C. robustus*.
14. Dorsal with 1st spine weak and generally shorter than 2nd; membranes of soft rays transparent. Upper jaw very protractile and its lip developed into a membranous expansion. D. xxxix-xli 2-3, A. ii 24-27, V. i 2 . . . . . *C. venustis*.
15. Dorsal low anteriorly. Barbels on snout and chin. D. xxxix-xli 4-7, A. ii 27-29, V. i 2-3 . . . . . *C. capensis*.
16. Dorsal with only one soft ray. Spines low anteriorly, gradually increasing to about twice the height of the 1st. Body slender and about uniform in depth for the greater part of its length. D. xliv-xlvi 1, A. ii 26-28, V. i 2 . . . . . *C. dorsalis*.
17. Dorsal joined to caudal by a membrane forming a deep notch between them: first four spines a little further apart individually. Body elongate. D. xlvi-xlix 3-4, A. ii 33-36, V. i 3 . . . . . *C. anguillaris*.
18. Similar to preceding, but head more pointed. Snout conical. Longitudinal bands on body. D. xli-xliv 2-3, A. ii 31, V. i 3 . . . . . *C. striatus*.

## (2) No orbital tentacles.

19. Dorsal with a notch between spinous and soft-rayed portions. First 3 spines a little apart from others, 1st and 2nd close together. Head blunt. D. xxix 9-10, A. ii 23-24, V. i 3 . . . . . *C. brachycephalus*.
20. Dorsal with first 3 spines erect, strong, higher than succeeding and slightly further apart individually; anterior soft rays about  $1\frac{1}{2}$  times height of adjacent spines. Scales relatively distinct. D. xxxi-xxxiii 5-6, A. ii 21-24, V. i 3 . . . . . *C. graminis*.



21. Dorsal with last soft ray curved and joined to caudal by a broad membrane. A row of pores on each side of lateral line. No scales on body. D. xxxix-xl 3, A. ii 27-28, V. 13 . . . . . *C. biporosus*.
22. Dorsal spines of uniform height, soft rays a little higher. D. xxx 6, A. ii 21 . . . . . *C. heterodon*.

## CLINUS SUPERCILIOSUS, L.

(Klip-fish.)

*Clinus superciliosus*, Linn. Syst., i., p. 442; Cuv. and Val., xi., p. 360, pl. 331; Cast. Mém., p. 51; Günth., iii., p. 268; Bleeker, Vische v. d. Kaap, pp. 55, 70; Kner, Novara, p. 200.

*Bleinnius capensis*, Forst., Deser. An., p. 408.

? *Bleinnius rubescens*, Lichtenst., Travels.

*Bleinnius versicolor*, Pappe, Synops., p. 19; Bleeker, Vische v. d. Kaap, pp. 55, 70.

*Clinus dubius*, Cast. Mém., p. 51.

*Clinus pantherinus*, Cast. Mém., p. 52.

*Clinus marmoratus*, Cast. Mém., p. 52.

Teeth, an outer row of strong sharp teeth on each jaw, with smaller teeth behind; a curved band on vomer. Depth of body 3 to  $4\frac{2}{3}$  times in total length excluding caudal, length of head 3 to  $4\frac{1}{5}$  times. Distance from eye to point of snout 1 to  $1\frac{3}{4}$  times diameter of eye, which is from slightly under 1 to  $1\frac{2}{3}$  times interorbital width and 4 to 6 times in length of head; depth of caudal peduncle  $2\frac{1}{2}$  to  $3\frac{1}{2}$  times in length of head. Profile of head more or less pointed; interorbital space flat or slightly convex, generally with a slight longitudinal groove or indent down the middle; eyes situated high on the head; a tentacle over upper posterior angle of each orbit consisting of a fleshy stalk slightly flattened at the end and divided, with two or three filaments on end and sides, the colour generally a dark blackish brown or liver colour; jaws about equal, the lower sometimes slightly longer; cleft of mouth lateral, maxillary reaches to vertical of middle or posterior margin of orbits. In deep-water specimens the lips appear to be thinner than in those of the littoral, and the mouth more cavernous.

Dorsal III xxx-xxxviii 5-9; commences about in line with posterior margin of preoperculum and extends to within a short distance of base of caudal. The first 3 spines are separated from the remainder by a membrane whose length is equal to or slightly greater than the distance between the bases of the 1st and 3rd spines; this membrane is attached somewhat low down on the

4th spine, from a fourth to a half of its length. The length of these first 3 spines seems to have a sexual significance in this species. In the males the 1st spine, which is usually the longest, ranges in length from  $\frac{2}{3}$  to  $\frac{4}{5}$  the length of the head, the 2nd is generally slightly shorter, the 3rd about  $\frac{1}{2}$  the length of the 2nd, and the 3 spines with their connecting membranes form when erect a triangular crest with a nearly vertical or slightly recurved front. In the females the crest formed by the first 3 spines is lower and more rounded, its height ranging from  $\frac{1}{3}$  to  $\frac{1}{2}$  the length of the head. The 2nd spine is often equal in height to the 1st, the 3rd slightly shorter, and generally there is a dark oval spot on the membrane connecting the 2nd and 3rd spines which extends on to these spines also. In both sexes the 4th spine is generally the shortest in the fin, the remainder increasing in length, gradually at first, but more rapidly posteriorly, the last spines being from  $\frac{1}{4}$  to  $\frac{1}{3}$  longer than the 4th. The anterior soft rays are a little higher than adjacent spines, posteriorly they successively decrease, giving a rounded margin to the fin. Pectorals 15-16; broad, middle rays longest,  $\frac{7}{10}$  to  $\frac{5}{8}$  length of head, membranes of lower rays incised. Ventrals 12; the longer ray  $\frac{3}{5}$  to  $\frac{4}{5}$  length of head. Anal 11 25-30; rays slightly lower anteriorly, posteriorly about same height as longest rays of dorsal, membranes incised. Caudal  $\frac{2}{3}$  to  $\frac{4}{5}$  length of head, either straight-edged with rounded or slightly rounded corners, membranes scalloped. Body deepest in its anterior third; lateral line arched over pectorals and more distinct on curve than posteriorly.

Colour: The hues are often very brilliant. Usually the ground colour is a reddish, yellowish, or greyish brown, a bronze or yellowish green, dark liver colour, &c., profusely marked, spotted, and shaded, the colouring very pleasingly blended; head and opercles with reticulated markings; body with about 6 irregular transverse bands of a dark brown extending on to the dorsal fin. Sometimes head, shoulders, and body are splashed or blotched with irregular patches of pink or red, green or other tints; often the lower half of the body is of much lighter shade than the upper, generally light green or yellow, profusely sprinkled with small spots or specks of darker hue, the line of demarcation between the upper and lower halves of the body being clearly marked longitudinally. In some localities the colouring is more subdued—a uniform reddish brown or dark shade, with darker spots and markings and transverse bands of the same colour; in other instances there are irregular longitudinal bands of crimson, or pale red, green, or yellow on the body, dotted with brown, black, grey, or white spots, the dark transverse

bands being much lighter in hue where they cross these streaks. Some specimens obtained from Robben Island and from a deep-water bank off L'Agulhas were of a uniform vivid crimson, orange, yellow, &c.; in some the crimson was diversified by a broad irregular band or row of irregular confluent spots of yellow or white with a dark brown border, running longitudinally from the eyes about the level of the lateral line for about  $\frac{3}{4}$  of the body, widest behind the pectorals and gradually tapering.

The diversity of colouring of this species is very marked.

About 80 specimens examined, ranging in length from 38 mm. to 272 mm.; the largest specimens came from Robben Island and off L'Agulhas Point, others were sent by the late Mr. Scully from Walwich Bay and by Mr. Brooking, East London, or were procured in the Cape Peninsula and at Hoetjes Bay. The species is very common in South African waters, and widely distributed; it is much esteemed for its delicate flavour. It does not appear to be confined to the littoral, but has been taken in varying depths up to 20 fms.

The variations in colour, fins, and shape are very marked, and it may be found necessary to recognise a number of varieties. We have not, however, found any very definite and constant divergence from the normal type except in the case of *C. superciliosus*, var. *arborescens*.

#### C. SUPERCILIOSUS var. ARBORESCENS, n. var.

Teeth, an outer row of strong, slightly recurved teeth, with 2 clusters behind at symphysis on each jaw, the clusters on the upper jaw being greater than on the lower; a short curved band on vomer. Depth of body  $3\frac{1}{2}$  to  $4\frac{2}{3}$  times in total length excluding caudal, length of head  $3\frac{2}{3}$  to  $4\frac{1}{3}$  times. Distance from eye to point of snout  $1\frac{1}{2}$  to  $1\frac{2}{3}$  times diameter of eye, which is slightly under 1 to  $1\frac{2}{3}$  times interorbital width and  $4\frac{1}{2}$  to 6 times in length of head; depth of caudal peduncle 3 to  $3\frac{2}{3}$  times in length of head. The orbital tentacles present a slightly different appearance from those of *C. superciliosus*, and consist of a rounded tapering stalk over each eye fringed at the sides and often with two fringed branches from the main stem; the colour being usually a light yellowish brown. Maxillary reaches to vertical of anterior margin or middle of orbits.

Dorsal iii xxxiii-xxxvii 5-7; slightly emarginate; the anterior crest differs from that of *C. superciliosus* in form, and appears to be the same in both sexes. The first 3 spines are erect and separated from the rest by a membranous space rather greater than

the distance between the bases of 1st and 3rd spines and about equal to diameter of eye; the 1st spine, which is usually the longest, from  $\frac{1}{3}$  to  $\frac{1}{2}$  the length of the head, the 2nd is of equal height or slightly shorter, the 3rd much shorter, and the membrane connecting the crest with the 4th spine is attached low down on the latter. The 4th spine is shortest, generally a little more than diameter of eye in length, the succeeding spines gradually lengthen posteriorly to about  $1\frac{1}{2}$  times diameter of eye. Anterior soft rays are longer than adjacent spines, the remainder successively shorten. Pectorals 14-15; broad and pointed, middle rays longest,  $\frac{2}{3}$  to nearly  $\frac{1}{2}$  length of head, membranes of lower rays incised. Ventrals 12; about  $\frac{3}{4}$  length of head. Anal 11 26-29; anterior rays about same length as last spines of dorsal, posterior rays slightly longer, membranes incised. Caudal generally slightly rounded, usually about  $\frac{3}{4}$  length of head, membranes scalloped.

Colour, generally brown of various shades, marbled or mottled with white, red, &c., numerous white specks on jaws and opercles and 6 or 7 irregular transverse bands of a dark shade on the body and extending on to dorsal fin; pectorals often banded with brown and yellow, ventrals and caudal tipped with yellow. Sometimes a longitudinal band of crimson or other bright hue runs along body from orbits to base of caudal. The colouring is on the whole very similar to that of *C. superciliosus*, but the reticulated markings that so frequently appear on the head of the latter are not apparently found on this variety.

Twenty-seven specimens examined, ranging in length from 129 mm. to 224 mm., from False Bay and Kommetje; one specimen was procured by *Pieter Faure* (s.) off the Roman Rock, in 13 fms. It is apparently not so widely distributed as *C. superciliosus*, from which it is sometimes not easily distinguished at a casual glance.

#### CLINUS ORNATUS, n. sp.

Teeth, an outer row of sharp conical teeth on each jaw, with 2 clusters behind on anterior part of upper jaw and a small band or cluster at symphysis of lower jaw, a chevron-shaped band on vomer. Depth of body  $3\frac{3}{4}$  to  $4\frac{3}{4}$  times in total length excluding caudal, length of head  $3\frac{2}{5}$  to four times. Distance from eye to point of snout  $\frac{4}{5}$  to 1 diameter of eye, which is  $1\frac{2}{3}$  times to twice interorbital width and  $3\frac{1}{2}$  to  $4\frac{1}{4}$  times in length of head; depth of caudal peduncle  $3\frac{1}{4}$  to 4 times in length of head. Profile of head rounded, with a bulge at upper anterior angle of orbits; snout blunt; a tentacle above middle of each orbit consisting of a rounded tapering stalk heavily fringed on

end and sides, sometimes also bifurcated at end, fringe often tipped with yellow; a fringed tentacle at anterior nostril; interorbital space slightly concave or flat with a longitudinal groove; eyes prominent; cleft of mouth oblique, maxillary reaches to vertical of middle or posterior margin of orbits. Numerous mucous pores on head and shoulders.

Dorsal III xxx-xxxiii 6-8; slightly emarginate, commences just behind vertical of posterior margin of orbits and barely reaches to caudal, only a very short free peduncle being left. Spines slender and flexible, the first 3 removed from the remainder by a membranous space equal to the distance between the bases of the 1st and 3rd; generally, the first 2 are about equal,  $\frac{1}{2}$  to  $\frac{2}{3}$  length of head, sometimes the 2nd is the longest or all 3 are subequal, the membranes connecting them to each other are deeply emarginate and they are connected with the base of the 4th by a membrane which forms a deep curved notch: this anterior crest when erected is about as wide at its upper extremity as at its base. The 4th spine is about  $\frac{1}{2}$  length of the 1st, the next few gradually lengthen slightly and the remainder are usually subequal and about  $\frac{2}{3}$  length of 1st, sometimes the spines of the middle of the fin are slightly longer than the rest. Anterior soft rays vary from a little more to a little less the height of the adjacent spine, posterior margin of fin is rounded owing to shortening of last rays. Pectorals 15; broad and pointed, middle rays longest,  $\frac{7}{10}$  to  $\frac{9}{10}$  length of head. Ventrals 12; inner ray  $\frac{3}{4}$  to  $\frac{1}{2}$  length of head, outer a little shorter. Anal II 25-28; rays about equal in height anteriorly to last spines of dorsal, slightly lengthening posteriorly; membranes incised. Caudal rounded,  $\frac{3}{4}$  to  $\frac{1}{2}$  length of head, membranes scalloped. Lateral line scales enlarged anteriorly, descending curve acute.

Colour, usually vivid. A yellowish or greyish brown, with small dark brown spots; 6 irregular transverse bands of dark brown edged with orange and extending on to dorsal fin; orange markings and blotches on head, body, dorsal and anal fins; pectorals transparent, with 5 rows of brown spots touched with orange; caudal almost transparent, with 2 transverse bands of orange near the extremity, and spotted with orange and brown; ventrals light green often barred with orange.

Nine specimens, ranging in length from 70 mm. to 161 mm. from False Bay; one specimen, 143 mm. in length, was procured by the ss. *Pieter Faure* when trawling near the Roman Rock, in 13 fms. The species does not seem to be very common on the littoral.

## CLINUS BREVICRISTATUS, n. sp.

Teeth, villiform, in a band on each jaw and a small chevron-shaped band on vomer. Depth of body  $3\frac{3}{4}$  times in total length excluding caudal, length of head  $4\frac{1}{2}$  times. Snout  $1\frac{1}{4}$  times in diameter of eye, which is  $3\frac{3}{5}$  times in length of head; interorbital width  $2\frac{1}{2}$  times in diameter of eye; depth of caudal peduncle  $3\frac{3}{5}$  times in length of head. Head short, a shallow transverse depression behind orbits, snout obtuse; eyes prominent, placed high up and slightly directed upwards; interorbital space flat; jaws about equal, maxillary reaches to vertical of anterior third of orbits; a well-developed tentacle above upper posterior angle of each orbit formed by a broad flat stalk with 9 cirri at the end; a similar tentacle with 3 or 4 cirri at the end at each anterior nostril; mucous pores on head and shoulders.

Dorsal III xxxii 5; slightly emarginate, commences above base of ventrals and extends almost to base of caudal; the first 3 spines are separated from the rest of the fin by a deep notch, the membrane being connected to the base only of the 4th spine, approaching in this respect the genus *Cristiceps*, which, however, we define as having the first dorsal *entirely* separate. The 1st and 2nd spines are equal and a little less than  $\frac{1}{3}$  length of head, the 3rd and 4th spines are about  $\frac{2}{3}$  the height of the first two, the next few lengthen gradually to about the middle of the fin, the remainder being about equal in height except the last, which is longer than the first two spines. [In the specimen described there is a deep notch between the 18th and 19th spines, but this may be due to an injury during its earlier stage.] The soft portion of the fin is higher than the spinous, the first soft ray being  $1\frac{2}{3}$  times height of adjacent spine. Pectorals 13; as long as the head. Ventrals I 3;  $\frac{2}{3}$  length of head, inner ray minute. Anal II 23; low anteriorly and rising posteriorly to height of longest ray of soft dorsal; membranes deeply incised. Caudal rounded, middle rays longest and about same length as head, membranes incised. Lateral line in a series of enlarged scales on curve. Scales distinct and comparatively large, a scale from middle measured 1.13 by .9 mm.

Colour, about seven irregular dark chocolate-brown bands across body extending to extremities of dorsal and anal fins, between these lines are irregular brick-red bands from the base of the dorsal across the lateral line but not reaching the abdominal margin; a longitudinal row of irregular white patches below lateral line from pectorals to base of caudal; an irregular white band from inferior margin of eye to border of opercle; a white patch on throat below opercle; a white

patch on base (which is dark brown) of pectorals. Pectoral and caudal fins semi-transparent and of a light greenish-yellow with rows of dark spots along the rays; anal yellowish-green between the dark body bands; soft dorsal semi-transparent about  $\frac{2}{3}$  of its extent; ventrals pale greenish-yellow with dark spots; upper part of head black; a small white spot on base of caudal.

One specimen (female) 79 mm. in length, from Kalk Bay.

CLINUS MUS, n. sp.

(Mouse Klipfish.)

Teeth, a row of strong conical teeth on each jaw, with a short inner row on anterior part of jaw; a curved band on vomer. Depth of body  $3\frac{1}{4}$  to 4 times in total length excluding caudal, length of head 5 to  $5\frac{1}{2}$  times. Distance from eye to point of snout 1 to  $1\frac{1}{4}$  times diameter of eye, which equals the interorbital width and is  $4\frac{1}{2}$  to  $5\frac{1}{2}$  times in length of head. Head small, upper profile almost straight, interorbital space convex; snout short; cleft of mouth oblique, upper lip slightly turned up and lower lip slightly projecting, maxillary reaches to vertical of anterior margin of orbits. No orbital tentacles.

Dorsal III xxiii-xxiv 3-4; commences in line with posterior margin of preoperculum and does not reach caudal, a long slender peduncle being left whose depth is generally about  $\frac{2}{3}$  the length of its free portion, which is  $\frac{1}{2}$  to  $\frac{2}{3}$  length of head. The first 3 spines are strong and erect and about  $\frac{1}{2}$  length of head, the 2nd spine being often a little higher than the other two; they are separated from the remaining spines by a membranous space about equal to the distance between the bases of the 1st and 3rd spines, and the transparent membrane joining them to the rest of the fin is attached low down near the base of the 4th spine, giving the appearance of a separate crest with its interspinous membranes incised. In the rest of the fin the membrane between each group of 2 or 3 spines is transparent, the anterior spine in each group being the longest; the first group, which is composed of the 4th and 5th spines, is the lowest; the spines of the succeeding groups becoming gradually higher until those of the last group are a trifle longer than the spines of the crest. The first soft rays are a little apart from the posterior ones, which are much shorter, and the connecting membrane is transparent; the 1st and sometimes the 2nd ray being a little longer than the adjacent spines. Pectorals 10-11;  $\frac{1}{3}$  length of head, the four middle rays longest and with scalloped membranes, the membranes of outer rays incised. Ventrals 1 3; longest ray  $\frac{2}{3}$  to  $\frac{1}{2}$  length of

head. Anal  $\text{II}$  15–17; anterior rays about same height as longest spines of dorsal, increasing posteriorly to  $1\frac{1}{2}$  times the height; the last two rays however are only half the height of the adjacent ones and are close together. Caudal is from  $\frac{3}{4}$  to the same length as head, posterior margin straight, membranes scalloped. Lateral line nearly straight, the upward curve behind pectorals being slight.

The colouring of these little fish is very pleasing, being generally a uniform hue of green of various shades, or crimson, yellowish or greenish-brown, &c.; frequently with a row of dark spots or blotches along the base of the dorsal fin, and sometimes with wavy lines of light yellow along the body from head to caudal peduncle.

Nine specimens examined, ranging in length from 41 mm. to 85 mm., from False Bay (St. James and Kalk Bay); found in rock-pools with weedy bottoms, about low tide mark.

#### CLINUS LAURENTII, n. sp.

Teeth, a row of small, strong conical teeth on each jaw, with a band behind on anterior portion of lower jaw and two patches behind at symphysis of upper jaw; a small curved row on vomer. Depth of body equals length of head and is 4 to  $4\frac{1}{3}$  times in total length excluding caudal. Distance from eye to point of snout slightly less than diameter of eye, which is about twice the interorbital width and  $3\frac{1}{3}$  to  $3\frac{2}{3}$  times in length of head; depth of caudal peduncle  $3\frac{1}{3}$  to 4 times in length of head. No orbital tentacles, anterior nostril with a flap; cleft of mouth slightly oblique, jaws about equal, upper lip projecting and slightly turned up, maxillary reaches to vertical of anterior third of orbits.

Dorsal  $\text{III}$  xxvii–xxviii 4–5; emarginate, commences in line with posterior margin of prooperculum. The first 2 spines are about equal in height,  $\frac{2}{3}$  length of head and closer to each other than to the 3rd, which is about  $\frac{3}{4}$  their height and is removed from the succeeding spines by a space equal to the distance between the base of the 1st and 3rd; the low crest thus formed is connected by the interspinous membrane to the base of the 4th spine—this connection is slight but distinct in the two smaller specimens examined, though not so marked in the largest. The 4th spine is the shortest in the fin, about  $\frac{1}{2}$  as high as the 1st; the membrane connecting it with the 5th is rather deeply notched, that connecting the 5th and 6th not so deeply; the 5th spine is as high as the 3rd, and the following spines lengthen gradually to the last, which is about the same height as the 1st. The anterior soft ray is a little higher than the adjacent spine, the succeeding rays decrease in height and are inserted in a slight



bending in of the dorsal profile of the body, the connecting membranes are more or less transparent. Pectorals 12; broad and rather pointed, the middle rays longest,  $\frac{1}{3}$  length of head, membranes incised. Ventrals 13;  $\frac{2}{3}$  to  $\frac{3}{4}$  length of head, inner ray small, middle ray longest. Anal 11 21-22; anterior rays as high as longest spine of dorsal, rising posteriorly to height of longest dorsal ray; membranes deeply incised. Caudal slightly rounded, about  $\frac{2}{3}$  length of head. Scales cycloid, comparatively large; lateral line distinct.

Colour (of preserved specimens), body brown, with about eight more or less distinct broad bands across it and continued on to dorsal and anal fins; pectorals and anal banded; a short broad band or patch runs downward and backward from the inferior margin of the eye.

Three specimens, 108 mm., 94 mm., 86 mm. in length respectively, from Mr. Robinson, Natal; named after Master Lawrence Robinson, who caught them at Winkle Spruit.

This species closely approaches the genus *Cristiceps* in the semi-detached condition of the dorsal crest.

#### CLINUS FUCORUM, n. sp.

Teeth, a single series of closely-set teeth on each jaw; a short curved row on vomer. Depth of body  $3\frac{1}{2}$  to 4 times in total length excluding caudal, length of head 4 to 5 times. Distance from eye to point of snout 1 to  $1\frac{1}{2}$  times interorbital width, and 1 to  $1\frac{3}{4}$  times diameter of eye, which is  $4\frac{1}{2}$  to 5 times in length of head. Profile of head descending abruptly from origin of dorsal fin to point of snout with a slight curve above orbits; no orbital tentacles; interorbital space convex. The short snout is a characteristic feature of the species, the upper lip being turned up and projecting slightly, upper jaw a little longer than lower, and when the mouth is closed the cleft is very oblique; maxillary reaches to about the vertical of the anterior margin of the orbits.

Dorsal xxviii-xxix 5-6; commences midway between the posterior margins of the eye and preoperculum, is more or less undulating and does not reach to caudal. The first 4 or 5 spines are more elevated than the succeeding ones and present the appearance of a most characteristic rounded crest, which however is not separated from the rest of the fin by any indentation. The 1st spine is usually a little shorter than the 2nd, which is  $\frac{2}{3}$  to  $\frac{1}{2}$  length of head, succeeding spines progressively decrease to about the 6th or 7th and are followed by two or three subequal spines whose height is about  $\frac{2}{3}$  that of the 2nd spine; generally the next few spines

successively lengthen and are followed by others that in turn decrease, forming a more or less pronounced curve, the succeeding spines again lengthen, the last few are subequal and about  $\frac{2}{3}$  the height of the 2nd spine. There is considerable diversity however in the height and extent of the undulations caused by the successive shortening and lengthening of the spines. The first 2 soft rays are a little higher than the adjacent spine, the succeeding rays rapidly shorten, giving a blunt termination to the fin. Pectorals 12; somewhat oval in shape, centre rays from  $\frac{1}{3}$  to the same length as the head and reach to about in line with origin of anal; membranes of inferior rays incised. Ventrals 13; centre ray about  $\frac{3}{4}$  length of head; the rays are connected by membrane for nearly their whole length, their extremities only being free. Anal 11 19-21; posterior rays longest and about  $\frac{1}{2}$  height of 2nd spine of dorsal, membranes incised; the last two or three rays, however, rapidly shorten, giving an almost vertical margin to end of fin. Caudal broad and rounded, about the length of the head; membranes scalloped. The body does not vary much in height for about  $\frac{2}{3}$  its length, after which it rapidly decreases to the caudal peduncle, which is comparatively long and slender, its length  $\frac{1}{2}$  to  $\frac{1}{3}$  greater than its depth, and  $\frac{1}{3}$  to  $\frac{1}{2}$  the length of the head.

Colour, uniform dark yellow, the tint often most marked on the pectorals and in the region between lower jaw and ventrals; or yellowish or dark brown, bronze green, &c.; the fins speckled with dark spots and also the body, on the latter the spots assume the form of indefinite vertical bands about 6 in number. A peculiar feature in some of the specimens is the absence of pigment on certain parts of the fins, *e.g.*, two wedge-shaped spaces on the margin of the membranes of the 7th and 8th spines of dorsal, and patches at the posterior extremity of that fin and of the anal, and on the margin and in the centre of the caudal; the last named is usually about the size of the eye and is traversed by the rays; these patches are transparent when the fish is alive, and are in marked contrast to the rest of the body. In other specimens the patches were of a pale yellow colour. The dorsal, anal, and caudal fins are usually tipped slightly with orange, which is often very marked on the posterior margin of the dorsal and anal, where the connecting membrane to the peduncle is often void of colour and transparent; there are also yellowish markings on the superior and inferior margins of the caudal. A most striking mark is a circular patch of white, like burnished silver, just behind the pectoral fins about the level of the lateral line, which can be covered or exposed by a

movement of the fin; in the females this is often absent altogether, or is smaller and more irregular in shape than in the males.

The species appears to frequent the vicinity of seaweed, and its colouring and general appearance render it almost indistinguishable from the fronds of weed among which it lives; specimens in the aquarium seemed to be rather sluggish in their habits, and spent most of their time reclining on the floor of the tank or on the rockwork, in which position they closely resembled a detached portion of a frond of seaweed, a resemblance that is probably protective. In its peculiarities of colouring, its short upturned lip like a pug-nose, the rounded crest and more or less undulated dorsal fin whose transparent or yellowish markings give the appearance of decayed or ragged edges, and the broad caudal on its slender peduncle, the fish has a rather unique appearance.

Eleven specimens examined, ranging from 43 mm. to 206 mm. in length, from weedy rock-pools at St. James and Kalk Bay.

CLINUS PAVO, n. sp.

Teeth, a row of small sharp teeth in each jaw, with a band of smaller ones behind them on the upper jaw and 2 small clusters at the symphysis of the lower; a small curved band on vomer. Depth of body  $3\frac{2}{3}$  to  $4\frac{2}{3}$  times in total length excluding caudal, length of head  $4\frac{1}{3}$  to  $4\frac{2}{3}$  times. Distance from eye to point of snout rather greater than diameter of eye, which is slightly greater than interorbital width and  $3\frac{3}{4}$  to  $4\frac{3}{4}$  times in length of head. No orbital tentacles, a flap on anterior nostril; interorbital space flat with a longitudinal groove. Head long and vertically compressed, mouth small, lower jaw slightly longer than upper, lips protruding and with a flap on chin, maxillary reaches to vertical of anterior nostril.

Dorsal xxxi-xxxv 3; slightly emarginate, commences in line with posterior margin of preoperculum but does not reach to caudal, a slender free peduncle about the diameter of the eye in length being left, to which the last soft ray is joined by a transparent membrane. Spines strong and erect, the first 3 higher than the succeeding, forming a low crest about  $\frac{2}{3}$  the length of the head in height. The first 2 spines are close together, the 3rd is rather further apart from them and still further from the 4th, from which it is removed by a space about equal to the diameter of the eye, the connecting membrane being transparent. The spines following the crest are low anteriorly, gradually increasing until they slightly exceed the 1st

spine in height. The first 2 soft rays are slightly higher than the adjacent spines; the 3rd ray is shorter and removed from them by a space equal to the diameter of the eye, and the membranes connecting it with the 2nd ray and with the caudal peduncle are transparent. Pectorals 12; about  $\frac{1}{3}$  length of head; membranes of middle rays scalloped, outer ones incised. Ventrals 13; longest ray  $\frac{1}{2}$  to  $\frac{3}{5}$  length of head. Anal 11 20-22; rays anteriorly about equal in height to last spines of dorsal, slightly longer posteriorly; membranes incised. Caudal from  $\frac{3}{4}$  to the same length as the head, slightly rounded, membranes scalloped.

The profile of the body is elevated, especially at the shoulder; lateral line not very distinct, curved over pectorals.

Colour, a ground of reddish or purple brown, with a row of dark ocellated spots at base of dorsal, and irregular wavy bands of silvery white markings from snout to caudal along the base of the dorsal and above and below lateral line; sometimes dark bands on back passing through the dorsal spines alternated with 6 similar bands from anal across the lateral line. Pectorals, ventrals, and caudal barred with brown and white.

Two specimens, 56 mm. and 88 mm. in length respectively, from weedy rock-pools at St. James and Kalk Bay; not often to be found.

#### CLINUS ACUMINATUS, C. and V.

*Clinus acuminatus*, Cuv. and Val., xi, p. 370; Günth., iii, p. 269; Kner, Novara, p. 302.

Teeth, a band of sharp-pointed, slightly recurved teeth on each jaw; the outer row sometimes enlarged, especially anteriorly, in mature specimens; a small chevron-shaped band on vomer. Depth of body  $4\frac{1}{2}$  to  $5\frac{1}{2}$  times in total length excluding caudal, length of head  $3\frac{1}{2}$  to  $4\frac{1}{2}$  times. Distance from eye to point of snout 1 to  $1\frac{3}{4}$  times diameter of eye, which is 4 to 6 times in length of head; interorbital width  $\frac{2}{3}$  to 1 diameter of eye; depth of caudal peduncle 3 to 4 times in length of head. A short tentacle above posterior upper angle of each orbit, consisting of a short fleshy stalk or base with 4 or 5 cirri at the end; interorbital space convex. Snout subconical; jaws about equal, the lower sometimes slightly longer than upper; maxillary reaches to vertical of anterior third or middle of orbits; mucous pores on head and round posterior margin of orbits; dorsal profile slightly elevated at shoulder.

Dorsal xxxi-xxxiii 5-7; commences in line with posterior margin of preoperculum and reaches almost to base of caudal, slightly

emarginate; spines erect and moderately strong, usually with extremities free and a short lobe on each; the first 2 or 3 generally about  $\frac{1}{3}$  length of head, the succeeding spines gradually lengthening until the last is about  $1\frac{1}{2}$  times as high as the 1st. Soft portion of fin higher than spinous, anteriorly the rays are about  $\frac{1}{3}$  longer than adjacent spines; posteriorly they successively shorten, giving a rounded margin to fin. Pectorals 12, rounded, middle rays longest, from  $\frac{3}{5}$  to  $\frac{7}{10}$  length of head. Ventrals 12-3; from  $\frac{1}{2}$  to  $\frac{3}{5}$  length of head, 3rd ray when apparent is very short. Anal 11 21-22; the rays anteriorly are about same height as last spine of dorsal, posteriorly they lengthen slightly; extremities of rays free, membranes incised. Caudal rounded, about  $\frac{2}{3}$  length of head.

Colour, usually light green, or light greenish or yellowish brown or grey, speckled with minute white spots and with from 4 to 6 irregular dark brown transverse bands on body; sometimes the ground colour is of a darker shade, often with irregular clusters of white specks along base of dorsal fin; belly of a light shade.

Over 40 specimens examined, ranging from 22 mm. to 102 mm. in length. A shapely, active, rather shy little fish, abundant on the littoral of the Cape Peninsula, frequenting rock-pools and ledges about low tide mark.

#### CLINUS COTTOIDES, C. and V.

*Clinus cottoides*, Cuv. and Val., xi, p. 367; Günth., iii, p. 269; Kner, Novara, p. 202.

Teeth, a row of sharp, slightly curved teeth, with 2 clusters or a band behind the anterior part, on each jaw. Depth of body 4 to 5 times in total length excluding caudal, length of head  $3\frac{1}{2}$  to  $4\frac{1}{3}$  times. Distance from eye to point of snout 1 to  $1\frac{1}{2}$  times diameter of eye, which is 1 to  $1\frac{3}{4}$  times interorbital width and 3 to  $4\frac{1}{2}$  times in length of head; depth of caudal peduncle 3 to 4 times in length of head. A tentacle over each orbit, consisting of a fringe of 5 or 6 cirri on a broad peduncle or base; interorbital space with a longitudinal depression, with a bold orbital ridge; a transverse depression behind orbits. Profile of head rounded, snout blunt; cleft of mouth wide, jaws about equal, maxillary reaches to vertical of middle of orbits; eyes prominent.

Dorsal xxxii-xxxiv 4-6; slightly emarginate, commences in line with or a little behind posterior margin of preoperculum and reaches almost to base of caudal; spines erect and moderately strong, low

anteriorly. First spine  $\frac{1}{5}$  to  $\frac{1}{4}$  length of head, succeeding 5 or 6 lengthen rapidly, the remaining spines more gradually; the last spine is generally from  $1\frac{1}{2}$  times to twice the length of the 1st. The anterior soft rays are a little longer than adjacent spines, the posterior rays successively decrease. Pectorals 13; broad, rounded, and  $\frac{3}{4}$  to  $\frac{4}{5}$  length of head, reaching to in line with origin of anal. Ventrals 1 2-3; from  $\frac{2}{3}$  to  $\frac{7}{10}$  length of head, 3rd ray when apparent is very small. Anal 11 21-24; about equal in height to longest spines of dorsal; membranes incised. Caudal slightly rounded,  $\frac{3}{5}$  to  $\frac{2}{3}$  length of head.

Colour, usually yellowish brown, yellowish or brownish green of various shades, or light green; mottled with brown or yellow and often speckled with grey and white; a row of dark, irregularly-shaped spots or blotches along the base of the dorsal extending on to the fin; a dark, irregularly shaped spot on operculum.

About 60 specimens examined, ranging from 23 mm. to 120 mm. in length, from False Bay; common in the weed-grown rock-pools on the foreshore, and apparently quite at ease in sun-heated tidal pools 2 or 3 inches deep. It does not seem to attain any much larger size.

CLINUS TAURUS, n. sp.

(Bull Klip).

Teeth, an outer row of strong close-set pointed teeth on each jaw, with smaller teeth behind in a lunate band, broader on upper jaw; broad chevron-shaped band (about 4 rows) on vomer. Depth of body  $3\frac{1}{3}$  to  $4\frac{1}{2}$  times in total length excluding caudal, length of head  $3\frac{1}{2}$  to  $4\frac{1}{4}$  times. Distance from eye to point of snout 1 to  $1\frac{1}{2}$  times diameter of eye, which is  $3\frac{1}{2}$  to  $4\frac{1}{2}$  times in length of head; interorbital width  $\frac{2}{3}$  to 1 diameter of eye; depth of caudal peduncle  $3\frac{1}{3}$  to  $4\frac{1}{3}$  times in length of head. A tentacle above each orbit, consisting of a short broad stalk or peduncle frequently twisted or bifurcated and heavily fringed at the end, often resembling a shaggy eyebrow; interorbital space flattened or slightly concave, and with a prominent ridge over each orbit; eyes prominent; head broad; profile blunt, rising abruptly from snout to orbits; snout short and broad; mouth wide and cavernous, maxillary reaches the vertical of the middle or posterior half of the orbits, jaws equal; many mucous pores on interorbital space, occiput, and shoulders, and a row of irregular clusters down posterior margin of preoperculum.

Dorsal xxxi-xxxv 5-6; commences a little in advance of posterior margin of preoperculum and extends nearly to the root

of the caudal; emarginate, especially anteriorly, the notch between 3rd and 4th spines usually deep. Spines erect and strong, especially the first 3; the 1st and 2nd are about equal in length and  $\frac{1}{5}$  to  $\frac{3}{10}$  length of head; the 4th spine is the shortest, the next 3 or 4 gradually lengthen, the succeeding spines being of uniform height, slightly longer than the 1st; the last is the longest in the fin, but lower than the soft rays; the anterior rays are  $1\frac{1}{4}$  to  $1\frac{1}{2}$  times the length of the 1st spine; posteriorly the rays shorten, giving a rounded termination to the fin. Pectorals 12, from  $\frac{3}{5}$  to  $\frac{4}{5}$  length of head, broad and pointed, the rays of the lower half longer than those of the upper, membranes incised. Ventrals 13; from  $\frac{3}{5}$  to  $\frac{2}{3}$  length of head, 3rd ray minute, sometimes only just apparent. Anal 11 22-24; slightly higher posteriorly, the rays having about  $\frac{1}{3}$  their length free and membranes deeply incised.

Colour, often very striking and bizarre, especially in the adult specimens, very variable as to the shades and arrangement of the hues. Usually a ground of yellow ochre, reddish brown, dark brown or bronze green, with 3 or 4 dark transverse bands; body, head, and anterior portion of dorsal often splashed or blotched with large irregular patches of white or red; fins generally tipped with orange or red, and often mottled with brown or green. Sometimes irregular pinkish blotches (which get very vivid when the fish is frightened or angry), covering head and shoulders and showing on upper part of body and on dorsal fin between the transverse bars; the throat and lower part of cheek and opercles often covered with irregular yellow and black markings.

The fish, which when mature has rather a fierce aspect, possesses in a marked degree the power of changing its colour. It is found on most of the foreshore of the Cape Peninsula where rock, sand and weed intermingle; and in its immature or half-grown stage is often difficult to distinguish from *C. cottoides*.

About 30 specimens examined, ranging in length from 97 mm. to 185 mm., from False Bay and Kommetje.

#### CLINUS LATIPINNIS, C. and V.

*Clinus latipinnis*, Cuv. and Val., xi, p. 394; Günth., iii, p. 264 (quoted); Cast. Mem., p. 53.

*Ophthalmolophus latipinnis*, Gill, Proc. Ac. Nat. Sc. Philad., 1860, p. 103.

Teeth, a row of sharp-pointed teeth on each jaw, with a band or cluster of smaller ones behind on anterior portion of jaws; a curved

band on vomer. Depth of body  $4\frac{2}{3}$  times in total length excluding caudal, length of head 5 times. Distance from eye to point of snout equals diameter of eye, which is  $4\frac{3}{4}$  times in length of head; interorbital width  $\frac{3}{4}$  diameter of eye; depth of caudal peduncle  $3\frac{1}{2}$  times in length of head. Profile of head rounded; a slight transverse depression behind orbits, which have their upper margin swollen, interorbital space concave; a short thick fleshy tentacle at upper posterior angle of each orbit, slightly flattened at the end and branched, and with a broad fringe or row of cirri; posterior nostrils very prominent as open tubes, anterior nostrils with a plain tentacle; snout blunt; cleft of mouth oblique, maxillary reaches to vertical of anterior third of orbits; mucous pores on interorbital space, round the eyes, and on shoulder and preoperculum.

Dorsal xxxiv 9; commences a little behind posterior margin of preoperculum and reaches almost to caudal; low anteriorly, the 1st spine about  $\frac{1}{4}$  length of head, the succeeding 8 or 9 lengthening to a little more than  $\frac{2}{3}$  length of head and the remainder subequal up to the last 3 or 4, which are slightly longer. Soft portion of fin more elevated than spinous, the anterior rays about  $\frac{2}{3}$  longer than adjacent spines. Pectorals 13, broad and rounded, more than  $\frac{1}{2}$  length of head, membranes of lower rays incised. Ventrals 13, nearly  $\frac{3}{4}$  length of head, 3rd ray minute. Anal 11 26; anteriorly the rays are about equal in length to last spine of dorsal, posteriorly they are about  $\frac{1}{2}$  longer; membranes incised. Caudal nearly  $\frac{3}{4}$  length of head, slightly rounded, membranes scalloped. Tubes of lateral line (66) well marked.

Colour (of preserved specimen), brownish, with minute dark specks on body and faint indistinct transverse bands; pectorals and caudal with brown dots forming transverse bars.

One specimen, 102 mm. in length, caught at St. James (False Bay).

#### CLINUS ROBUSTUS, n. sp.

Teeth, an outer row of strong conical teeth on each jaw, with an inner band broad at the symphysis on the upper jaw, and a cluster on each side of symphysis of lower jaw, the teeth in the posterior row of each cluster being longer than the others; a broad curved band on vomer. Depth of body  $3\frac{1}{2}$  to  $4\frac{1}{2}$  times in total length excluding caudal, length of head  $3\frac{2}{3}$  to 4 times. Distance from eye to point of snout  $1\frac{3}{4}$  to 2 times diameter of eye, which is equal to or a little greater than interorbital width and 5 to 7 times in length of head. Depth of caudal peduncle 4 to  $5\frac{1}{4}$  times in length of head. Head broad and



profile somewhat rounded at orbits; a tentacle above each eye, consisting of a short broad peduncle, broadened and flattened and heavily fringed with above 12 cirri at the end, sometimes 2 or 3 cirri at base; generally a flap at anterior nostril; mouth broad and cavernous in adult, with thin lips rather pointed at symphysis of jaw and with perpendicular corrugations on them; jaws about equal, maxillary reaches to vertical of posterior half or posterior margin of the orbits; many mucous pores on head and along posterior margin of preoperculum.

Dorsal xxxii-xxxiv 10-14; slightly emarginate, commences slightly in advance of posterior margin of preoperculum and extends almost to base of caudal; in one specimen examined it was decidedly undulating, but this may have been the result of early distortions; usually there is not much difference in height. Spines strong and erect, the anterior ones slightly further apart individually, the first 3 are equidistant and removed from the 4th by a space about equal to the diameter of the eye, the connecting membrane forming a rather deeper notch between 3rd and 4th. The 2nd spine is usually a little higher than the 1st, about  $\frac{3}{10}$  length of head, succeeding spines are slightly lower anteriorly, gradually lengthening posteriorly to slightly higher than the longest anterior spine. Soft portion of fin more elevated than spinous, longest anterior rays about  $\frac{1}{2}$  higher than last spine; posterior rays shorten slightly. Pectorals 12; from  $\frac{3}{4}$  to  $\frac{5}{8}$  length of head, acutely oval, membranes incised. Ventrals 13; rays strong, and joined by membrane for about half their length; middle ray longest, about  $\frac{3}{5}$  length of head, 3rd ray short. Anal 11 27; rays about equal in height to last spines of dorsal, membranes deeply incised. Caudal  $\frac{3}{5}$  length of head, rounded, membranes scalloped. Scales minute, and extending on to base of pectorals; lateral line very indistinct or incomplete posteriorly, scales enlarged.

Colour, dark olive-green or bronze-green, dark brown, &c., light underneath, head and body mottled and spotted; 7 or 8 irregular transverse bars on body extending through dorsal; white patches and sometimes irregular bars of white on dorsal or along base of fin, only slightly extending on to body; white patches on base of pectorals; orange specks on fins, and blotches on upper part of body and head; head of a yellowish tinge on lower part and with numerous small white and brown specks; caudal barred with light and dark greenish brown and tipped with white or dull crimson.

This species appears to possess in a high degree the power of changing its colour—not only the shade, but apparently even the

colour itself. The corrugations on the lips, which are very apparent even in the preserved specimens, are a noticeable peculiarity.

Nine specimens examined, ranging in length from 138 mm. to 280 mm., the largest obtained from Seal Island, False Bay, the others from that neighbourhood or caught off the rocks in Kalk Bay.

CLINUS VENUSTRIS, n. sp.

Teeth, an outer row of fine-pointed teeth on each jaw, with a cluster of smaller teeth behind on each side of symphysis of upper jaw and a cluster or small band at the symphysis of the lower; a narrow chevron-shaped band on vomer. Depth of body  $3\frac{2}{3}$  to  $4\frac{1}{4}$  times in total length excluding caudal, length of head  $4\frac{1}{4}$  to  $4\frac{3}{4}$  times. Distance from eye to point of snout  $\frac{5}{7}$  to  $\frac{6}{7}$  diameter of eye, which is 3 to  $3\frac{1}{3}$  times in length of head; inter-orbital width  $\frac{1}{2}$  to  $\frac{2}{3}$  diameter of eye; depth of caudal peduncle  $2\frac{3}{4}$  to  $3\frac{3}{4}$  times in length of head. A well-developed tentacle at upper posterior angle of each eye, consisting of a fleshy stalk fringed at end and sides; a tentacle on anterior nostril; inter-orbital space flat; eyes prominent; snout short and subconical; cleft of mouth oblique; jaws equal, the upper very protractile and its lip developed into a membranous expansion, maxillary reaches to vertical of anterior third of orbits; mucous pores on head, opercles, below orbits, &c.

Dorsal xxxix-xli 2-3; slightly emarginate, commences in line with posterior margin of preoperculum and reaches to base of caudal, to which it is joined by a transparent membrane. The first 2 spines are close together, the 1st being usually the shortest in the fin and from  $\frac{1}{4}$  to  $\frac{2}{5}$  length of head and  $\frac{2}{3}$  to  $\frac{7}{8}$  length of 2nd spine; sometimes the first two spines are equally short and the 3rd is longer. The remaining spines are low anteriorly, gradually rising until the last two are  $\frac{1}{8}$  to  $\frac{1}{2}$  higher than the longest anterior spine. Anterior soft rays are slightly longer than adjacent spines, connecting membranes transparent. Pectorals 13-14; broad and pointed, middle ray longest, about  $\frac{9}{10}$  length of head. Ventrals 1 2; inner ray longer and  $\frac{2}{3}$  to  $\frac{1}{2}$  length of head. Anal 11 24-27; rays about equal in height to longest spines of dorsal, slightly higher posteriorly, membranes deeply incised. Caudal  $\frac{2}{3}$  to  $\frac{1}{2}$  length of head, slightly rounded, membranes scalloped. In some of the specimens a row of pores was found on each side of arch of lateral line, but in the majority this was not apparent.

Colour, olive green, reddish brown, brown, &c., mottled with

light and dark spots and patches, or prettily variegated with red, bright-blue, and white and yellow markings on body and vertical fins, especially the anal; sometimes there are bright orange blotches at base of dorsal, or longitudinal irregular brown bands crossed by broad confluent patches of the same shade. The tints are always very pleasingly arranged.

Fifteen specimens, ranging in length from 82 mm. to 110 mm., from Fish Hoek (Kalk Bay).

#### CLINUS CAPENSIS, Günth.

*Clinus capensis*, Günth., iii, p. 269.

*Cirrhibarbis capensis*, Cuv. and Val., xi, p. 406, pl. 337; Bleeker, *Vische v. d. Kaap*, p. 55.

Teeth, a single series of sharp-pointed slightly recurved teeth, with a small cluster behind on each side of symphysis, on either jaw; a small chevron-shaped band on vomer. Depth of body  $4\frac{1}{2}$  to 6 times in total length excluding caudal, length of head  $3\frac{2}{3}$  to 5 times. Distance from eye to point of snout  $1\frac{2}{5}$  to  $2\frac{1}{5}$  times diameter of eye, which is  $4\frac{1}{2}$  to 6 times in length of head; interorbital width  $\frac{1}{2}$  to  $\frac{3}{4}$  diameter of eye; depth of caudal peduncle  $3\frac{2}{3}$  to  $4\frac{2}{3}$  times in length of head. A tentacle at posterior upper angle of each orbit, consisting of a short palmate stalk with from 4 to 12 cirri at the end, a fringed or branched tentacle at anterior nostril; interorbital space convex; cleft of mouth wide, jaws somewhat pointed and the lower projecting slightly beyond the upper, maxillary reaches to vertical of anterior margin or middle of orbits. Snout long, with superior profile slightly concave, and with a row of 3 plain tentacles or barbels anteriorly; 8 barbels on chin generally disposed in a circular group of 6, but sometimes in 2 rows of 3 each, with 2 barbels a little to the rear and further apart individually; an open pore at the base of each rear barbel and apparently 2 in the group; a row of pores along inferior border of preoperculum and several pores on head and shoulders.

Dorsal xxxix-xli 4-7; commences in line with posterior margin of preoperculum and extends but is scarcely united to base of caudal; low anteriorly, the spines frequently having a tuft of 3 or 4 short pinkish filaments at their free extremity. The 1st spine usually about  $\frac{1}{5}$  length of head, the remainder gradually lengthening, the last spine being from  $1\frac{1}{3}$  to twice the height of the 1st; soft rays a little longer than adjacent spine.

Pectorals 13; oval,  $\frac{1}{2}$  to  $\frac{3}{5}$  length of head. Ventrals 1 2-3; first two rays about equal,  $\frac{1}{2}$  length of head, 3rd ray minute and not always apparent. Anal 11 27-29; slightly lower anteriorly, posteriorly about same height as soft rays of dorsal; membranes incised. Caudal about  $\frac{1}{2}$  length of head, rounded, membranes scalloped. Lateral line has scales enlarged, but is indistinct posteriorly.

Colour, marbled brown, green or yellow; often with a row of dark blotches below base of dorsal fin and irregular transverse bands or blotches on body, frequently speckled with white or other shades, belly of lighter hue, tips of anal, ventrals and pectorals red. In most specimens a dark spot enclosed in a white or red irregular border or ring is found behind the head at the beginning of the lateral line.

Fourteen specimens, ranging from 55 mm. to 138 mm. in length, from False Bay (St. James and Kalk Bay); found in rock-pools, and caught amongst rock and weed about low tide mark, not very numerous.

#### CLINUS DORSALIS, Bleek.

*Clinus dorsalis*. Cast. Mem., p. 54; Bleeker, *Vische v. d. Kaap*, pp. 54, 72; Günth., iii, p. 271.

Teeth, an outer row on each jaw, with a small cluster behind on each side of symphysis of lower and a band behind on upper jaw; a chevron-shaped patch on vomer. Depth of body 5 to  $6\frac{1}{2}$  times in total length excluding caudal, length of head  $4\frac{2}{5}$  to  $5\frac{2}{5}$  times. Distance from eye to point of snout 1 to  $1\frac{1}{4}$  times diameter of eye, which is 4 to 5 times in length of head; interorbital width  $\frac{3}{5}$  to 1 diameter of eye; depth of caudal peduncle  $2\frac{3}{4}$  to  $3\frac{2}{3}$  times in length of head. A tentacle above each orbit, consisting of a short fleshy stalk with a fringe of 4 or 5 short cirri; interorbital space convex; head narrow and pointed; lower jaw slightly longer than upper, maxillary reaches to vertical of anterior margin or anterior third of orbits; a row of pores down posterior margin of preoperculum, and a few on each side of nape.

Dorsal xlv-xlvi 1; slightly emarginate, commences behind the vertical of posterior margin of preoperculum, and barely joined to base of caudal by a membrane. Spines low anteriorly, 1st about  $\frac{1}{5}$  length of head, succeeding spines gradually lengthening, the last 10 or 12 about equal in height and nearly twice as

long as the 1st; soft ray short. Pectorals 12; from  $\frac{2}{3}$  to  $\frac{3}{5}$  length of head. Ventrals 1 2; from  $\frac{1}{2}$  to  $\frac{2}{3}$  length of head. Anal 11 26-28; about equal in height to posterior spines of dorsal; membranes incised. Body long and slender, of the same depth for the greater part of its length.

Colour, generally a uniform green, yellow, or brown, of various shades, often with streaks or dots of a darker hue. Sometimes variegated by a white streak from snout through interorbital space to origin of dorsal, an oval black patch over opercular opening with dark streaks radiating from the eyes and a row of black spots on body along base of dorsal.

Fifteen specimens, ranging from 28 mm. to 67 mm. in length, from False Bay (St. James and Kalk Bay). Found in rock-pools, and appears to be the smallest in size of the genus.

#### CLINUS ANGUILLARIS, C. and V.

(Slangetje.)

*Clinus anguillaris*, Cuv. and Val., xi, p. 390, pl. 334; Cast. Mem., p. 53; Bleeker, *Vische v. d. Kaap*, p. 55; Günth., iii, p. 271.

Teeth, an outer row of strong cardlike teeth on each jaw, with a narrow band behind on anterior portion of jaw; a narrow curved band on vomer. Depth of body  $5\frac{1}{2}$  to 7 times in total length excluding caudal, length of head  $5\frac{1}{2}$  to 6 times. Distance from eye to point of snout  $1\frac{2}{3}$  to  $1\frac{1}{3}$  diameter of eye, which is 1 to  $1\frac{1}{4}$  times interorbital width and 5 to 7 times in length of head; depth of caudal peduncle 2 to  $3\frac{1}{2}$  times in length of head. Head slightly depressed and rounded, snout of moderate extent and blunt; a tentacle above each orbit consisting of a short stalk, sometimes bifurcated, palmated and fringed; interorbital space convex; cleft of mouth slightly oblique; jaws about equal, the lower sometimes slightly longer than upper; maxillary reaches to vertical of anterior half of orbits.

Dorsal xlviii-xlix 3-4; slightly emarginate, commences in line with posterior margin of preoperculum, and reaches to caudal, the connecting membrane forming a curved notch between the fins. Spines short and flexible, the first 4 a little further apart individually than the rest. Anterior spines low, the 1st usually about  $\frac{1}{3}$  length of head, succeeding spines gradually lengthening, the last being from  $\frac{2}{3}$  to  $\frac{3}{5}$  higher than the 1st; anterior soft rays longer than adjacent spines, slightly decreasing posteriorly. Pectorals 13-14, from  $\frac{1}{2}$  to  $\frac{2}{3}$  length of head. Ventrals 1 3; from  $\frac{1}{2}$  to  $\frac{2}{3}$  length of head and enclosed in a membrane nearly to their extremity, the middle ray

longest, other 2 about equal and slightly shorter. Anal  $\text{II}$  33-36; rays about uniform in length, a little higher than last spine of dorsal, membranes incised, caudal rounded,  $\frac{2}{3}$  to  $\frac{3}{5}$  length of head, membranes scalloped. Scales small and deeply imbedded; lateral line distinct, rising in a curve above origin of anal. Body elongate.

Colour, generally uniform, of various shades of yellow, brown, yellowish green, red, dull crimson; mottled with darker blotches, spots, and sometimes bars; often with a row of bright oblong spots below dorsal.

Twenty specimens examined, ranging from 85 mm. to 284 mm. in length, from False Bay. The species, which is the most eel-like of the genus, is fairly plentiful, and is usually found in more or less secluded holes or rock-pools about low tide mark.

#### CLINUS STRIATUS, n. sp.

Teeth, an outer row of sharp villiform teeth with anteriorly a broad band or cluster behind them, on each jaw; a curved band on vomer. Depth of body  $5\frac{1}{2}$  to 7 times in total length excluding caudal, length of head 5 times. Distance from eye to point of snout  $1\frac{3}{4}$  to 2 times interorbital width and  $1\frac{1}{6}$  to  $1\frac{1}{3}$  times diameter of eye, which is 4 to 5 times in length of head; depth of caudal peduncle 3 to  $3\frac{3}{4}$  times in length of head. A tentacle over each orbit, consisting of a short fleshy stalk with a short fringe at the end; interorbital space convex; head pointed, snout conical; cleft of mouth small, lower jaw a shade longer than upper, maxillary reaches to the vertical of the anterior margin of the orbits.

Dorsal xli-xliv 2-3; emarginate, commences in line with posterior margin of preoperculum and joined to caudal, the connecting membrane forming a deep notch between the two fins. The anterior spines weak and shorter than the rest, the 2nd, 3rd, and 4th are a little further apart individually; 1st spine about  $\frac{1}{5}$  length of head, the succeeding spines gradually lengthening, the last being about twice as high as the 1st. Anterior soft rays a little longer than adjacent spines. Pectorals 13; from  $\frac{3}{5}$  to  $\frac{2}{3}$  length of head, membranes incised. Ventrals 13; inner ray longest, about  $\frac{3}{5}$  length of head, 3rd ray minute, sometimes apparently absent. Anal  $\text{II}$  31; rays subequal and about same height as last spine of dorsal; membranes slightly incised. Body elongate and somewhat cylindrical; lateral line strongly marked on the curve.

Colour, reddish brown; the body covered with parallel lines of alternate pinkish brown and white, passing longitudinally from eye

to caudal on upper half of body and from behind pectorals to caudal on lower half ; a white band from dorsal through interorbital space to snout, and a brown band from eyes to snout, extending on to lower lip ; outer margin of dorsal and anal, and extremity of caudal white ; inner half of ventrals white, outer portion reddish brown.

Four specimens from Simons Bay (Selbourne Dock), in length ranging from 122 mm. to 146 mm. The species greatly resembles *C. anguillaris*, but has fewer dorsal and anal spines and rays, the snout is somewhat different in shape, and the 3rd ventral ray is minute.

CLINUS BRACHYCEPHALUS, C. and V.

*Clinus brachycephalus*, Cuv. and Val., xi, p. 371 ; Günth., iii, p. 264.

*Blennioclinus brachycephalus*, Gill, Proc. Ac. Nat. Sci. Phil., 1860, p. 103, *vide* Jordan and Everman, Bul. U.S. Nat. Mus., iii, p. 2360.

Teeth, a narrow band of sharp-pointed teeth, those in the outer row being larger, on both jaws ; a patch on vomer. Depth of body  $4\frac{1}{3}$  to 5 times in total length excluding caudal, length of head  $4\frac{3}{5}$  to  $4\frac{2}{3}$  times. Distance from eye to point of snout about  $1\frac{1}{2}$  times interorbital width and 1 to  $1\frac{1}{4}$  times diameter of eye, which is  $3\frac{2}{3}$  to 5 times in length of head ; depth of caudal peduncle 3 to  $3\frac{1}{4}$  times in length of head. No orbital tentacles, anterior nostril with a well-developed one divided and fringed at the end ; interorbital space convex ; head short and blunt, slightly depressed on top, the anterior profile well rounded from snout to nape ; mouth small with a lateral cleft, maxillary reaches to the vertical of anterior margin of orbits. Pores on head and shoulders, a row down posterior margin of preoperculum, and a row along each side of arched portion of lateral line from the head to where the curve descends to the median line.

Dorsal xxix 9-10 ; commences in line with posterior margin of preoperculum and reaches nearly to caudal. The first 3 spines are a little removed from the 4th, to which they are joined by a transparent membrane, the space between the 3rd and 4th being about equal to the distance between the bases of the 1st and 3rd ; the first 2 are close together and  $\frac{2}{5}$  to  $\frac{3}{5}$  the length of the head ; succeeding spines are a little lower and about equal in height as far as the 26th, the last 3 successively decreasing until only about  $\frac{1}{2}$  length of head or  $\frac{1}{4}$  to  $\frac{1}{5}$  the height of adjacent soft ray ; a deep notch is thus formed between spinous and soft-rayed portions of the fin. The soft rays are higher than the spines and decrease in length posteriorly. Pectorals 13 ; nearly as long as head, broad and rounded, membranes

of lower rays incised. Ventrals 13; the middle ray longest,  $\frac{1}{2}$  to  $\frac{7}{10}$  length of head, 3rd ray minute. Anal 11 23-24; rays about the height of longest spine of dorsal and lengthen slightly posteriorly, membranes incised. Caudal  $\frac{3}{5}$  to  $\frac{4}{5}$  length of head, rounded, membranes scalloped.

Colour, mottled orange, red, olive green, brown, &c. Sometimes with a broad band of white from preoperculum along the side to posterior third of body with white spots above and below and at intervals on dorsal. Pectorals, ventrals and anal strikingly marked with brilliant patches and spots of red and with white patches on margin of anal; an ocellated spot above the axil about the size of the eye, green in the centre and red in the periphery.

Two specimens, 51 mm. and 92 mm. in length respectively, from False Bay (St. James and Simons Bay); found in rock-pools.

#### CLINUS GRAMINIS, n. sp.

(Grass Klipfish.)

Teeth, a row of small pointed teeth on each jaw with a band, broad at the symphysis, of smaller teeth behind them; a curved cluster on vomer. Depth of body  $3\frac{1}{2}$  to  $4\frac{1}{2}$  times in total length excluding caudal, length of head  $4\frac{1}{3}$  to 5 times. Distance from eye to point of snout 1 to  $1\frac{1}{4}$  times diameter of eye, which is about 1 to  $1\frac{1}{3}$  times interorbital width and  $3\frac{2}{3}$  to 5 times in length of head; depth of caudal peduncle 3 to  $3\frac{1}{2}$  times in length of head. No orbital tentacles; interorbital space convex; head and snout pointed; mouth small, jaws equal, maxillary reaches to vertical of anterior third of orbits.

Dorsal xxxi-xxxiii 5-6; slightly emarginate, commences in line with posterior margin of preoperculum and extends almost to base of caudal. First 3 spines erect, strong, and higher than the succeeding; 1st and 2nd subequal and  $\frac{1}{3}$  to  $\frac{2}{5}$  length of head; 3rd spine a little further removed from 2nd and 4th, respectively, and the connecting membranes often transparent. The 3rd and 4th spines are lowest, being from  $\frac{1}{2}$  to  $\frac{3}{4}$  length of 1st; the remainder gradually lengthen to the height of the 1st. First 2 soft rays  $1\frac{1}{3}$  to  $1\frac{1}{2}$  times length of adjacent spines, the remainder shorten slightly, the last being joined to caudal peduncle by a transparent membrane. Pectorals 12; from  $\frac{2}{3}$  to  $\frac{4}{5}$  length of head, inferior membranes incised, remainder scalloped. Ventrals 13; inner ray longest,  $\frac{1}{2}$  to  $\frac{3}{4}$  length of head. Anal 11 21-24; rays about equal in height to longest spine of dorsal, slightly higher posteriorly; membranes incised. Caudal



about  $\frac{3}{5}$  length of head, broad and rounded, membranes scalloped. The body is elevated on the dorsal and abdominal profiles; scales relatively distinct, rather oblong in shape and readily discernible to the naked eye.

Colour, bronze or light green, red, reddish or greenish brown, &c., with dark blotches at the base of the dorsal fin; sometimes with dark longitudinal bands on the body, or dark blotches longitudinally displayed, with white specks here and there or a row of white spots.

Eleven specimens, ranging in length from 46 mm. to 132 mm., from False Bay (St. James and Kalk Bay); found in weedy rock-pools, &c.

#### CLINUS BIPOROSUS, n. sp.

Teeth, a row of strong sharp teeth on each jaw, with a row or cluster of smaller teeth behind them on anterior portion of jaw; a curved band on vomer. Depth of body 6 to  $6\frac{1}{2}$  times in total length excluding caudal, length of head  $5\frac{1}{2}$  to 6 times. Distance from eye to point of snout equals diameter of eye, which is  $1\frac{2}{5}$  to 2 times interorbital width and  $3\frac{4}{5}$  to 4 times in length of head; depth of caudal peduncle 3 to  $3\frac{3}{5}$  times in length of head. No orbital tentacles, but anterior nostril has a plain tentacle or flap; profile of head rounded from nape to snout, a longitudinal ridge from interorbital space to upper lip; lips thick, cleft of mouth slightly oblique, maxillary reaches to vertical of anterior nostril or anterior third of orbits; eyes prominent. Mucous pores on head, nape, and pre-orbital, a row round the eyes and along posterior and lower margins of preoperculum, and a row on each side of the lateral line ending in a single pore between last ray of dorsal and anal.

Dorsal xxxix-xl 3; commences in line with posterior margin of preoperculum and reaches to base of caudal. Anterior spines lower and not so strong as remainder; 1st spine about  $\frac{1}{6}$  length of head, succeeding spines gradually increase in length, the last being about  $\frac{1}{2}$  length of head. First 2 soft rays a little higher than adjacent spines, the 3rd shorter and joined to base of caudal by a membrane whose length is about equal to the distance between the bases of the 1st and 3rd rays. Pectorals 11-12;  $\frac{1}{2}$  to  $\frac{3}{5}$  length of head. Ventrals 1 3; about  $\frac{1}{2}$  length of head, 3rd ray minute. Anal 11 27-28; rays subequal and nearly same height as longest spines of dorsal, membranes incised. Caudal  $\frac{3}{5}$  length of head, rounded, middle rays longest. Body without scales and in shape very similar to *C. anguillaris*.

Colour, uniform deep crimson, yellowish brown, &c.

Three specimens, one of 104 mm. in length procured by the ss. *Pieter Faure* when trawling in False Bay, Seal Island, SE. by E.  $\frac{1}{2}$  E.  $2\frac{1}{2}$  miles, in 14 fms.; the others, 85 mm. and 117 mm. in length respectively, caught amongst rocks at about low water mark at St. James (False Bay).

CLINUS HETERODON, C. and V.

*Clinus heterodon*, Cuv. and Val., xi, p. 394.

Teeth, in a single series except in the centre, where there are two clusters behind on each jaw; a chevron-shaped line on vomer. Depth of body at pectorals  $4\frac{1}{2}$  times in the total length. Head short and profile convex. No orbital tentacles.

Dorsal xxx 6; reaches to the base of the caudal; is of uniform height except the soft rays, which are a little higher. Anal 11 21.

Colour, brown, except the belly, which is reddish, and the extremities of the anal rays, which are whitish.

Length  $3\frac{1}{2}$  inches.

CRISTICEPS.

Body moderately elongate, covered with small or rudimentary scales. Snout short, cleft of mouth of moderate width. Head generally with tentacles; fine teeth on jaws and vomer. Two dorsal fins entirely separate from each other; the first of three spines, the second of many spines and soft rays. Ventrals jugular, composed of one hidden spine and two or three soft rays. Gill-opening wide. Viviparous.

CRISTICEPS ARGENTATUS, Risso.

*Blennius argentatus*, Risso, Ichth. Nice, p. 140.

„ *audifredi*, Risso, Ichth. Nice, p. 139.

*Clinus argentatus*, Risso, Eur. Mérid., iii, p. 238.

„ *testudinarius*, Risso, Eur. Mérid., iii, p. 239.

„ *virescens*, Risso, Eur. Mérid., iii, p. 239.

„ *audifredi*, Risso, Eur. Mérid., iii, p. 240.

„ *mutabilis*, Cocco, Giorn. Sc. Lett. e Arti Sicil., Avril, 1833, xlii, p. 9, tab. 42, fig. 2.

*Clinus argentatus*, Cuv. and Val., xi., p. 354; Guichen., Explor. Algér. Poiss., p. 74.

D. iii xxix-xxx 3-4; A. ii 19-23; V. i 2; B. 6.

The height of the body is contained 6 times in the total length, the length of the head  $5\frac{1}{3}$  times. The snout is of moderate extent,

sub-conical, with the lower jaw somewhat prominent. Palatine teeth none. The width of the interorbital space is less than the diameter of the eye; a small simple tentacle above the orbit. Scales exceedingly small. A short detached dorsal fin on the nape of the neck; the spines by which it is formed are slender and rather longer than those of the remaining fin; the latter not emarginate, united with the base of the caudal. Brown or yellowish, more or less spotted and marbled with darker; generally a series of whitish or yellowish spots along the sides.

Mediterranean. Cape of Good Hope. Coast of Australia.

European and African specimens, with 19 or 20 soft rays in the anal fin.

Australian specimens, with 23 soft rays in the anal fin.

The above description and synonymy are taken from Gunther's Catalogue of Fishes, vol. iii, p. 273.

#### CRISTICEPS MENTALIS, n. sp.

Teeth, a row of strong conical detached teeth on each jaw, with a band of smaller ones behind on anterior portion of upper jaw and a small patch at symphysis of lower jaw; a curved band on vomer. Depth of body about equals length of head, which is  $4\frac{3}{10}$  times in total length excluding caudal. Distance from eye to point of snout  $1\frac{1}{2}$  times diameter of eye, which is  $1\frac{1}{3}$  times interorbital width and  $5\frac{1}{8}$  times in length of head. No orbital tentacles; a fairly well-developed tentacle on anterior nostril; profile of head low and descending gradually to point of snout, which is somewhat acute; lower jaw slightly longer than upper, and the lower lip projects as a triangular flap on chin about  $\frac{3}{4}$  the diameter of the eye in length; cleft of mouth slightly oblique, maxillary reaches to vertical of anterior third of orbits; eyes prominent.

Dorsal III xxxiii 7; emarginate anterior fin formed of three spines situated on the nape, commencing in line with posterior margin of preoperculum; the distance between the base of the 3rd of these spines and the 1st spine of the 2nd dorsal is about equal to the distance between the bases of the 1st and 3rd spine of anterior fin, and the membrane of the 3rd spine does not quite reach the base of the 1st spine of the 2nd dorsal. In the crest so formed the first 2 spines are subequal, about  $\frac{1}{3}$  the length of the head, and with a short filament; the 3rd is shorter, being about  $\frac{1}{4}$  length of head. The 2nd dorsal commences in line with base of pectorals and does not reach to caudal; spines weak, anteriorly about  $\frac{1}{2}$  height of

longest spines of crest, lengthening to about height of crest posteriorly. Anterior soft rays about  $\frac{1}{7}$  higher than adjacent spine, the succeeding rays shorten and are joined to caudal peduncle by a membrane. Pectorals 12; broad and oval, middle rays longest and nearly  $\frac{2}{3}$  length of head, reaching to about vertical of the vent; membranes emarginate. Ventrals 13; strong, the rays enclosed in membrane for greater part of their length; middle ray longest and about  $\frac{1}{2}$  length of head. Anal 11 29; rays lower anteriorly, increasing posteriorly to about height of last spine of 2nd dorsal; membranes incised. Caudal about  $\frac{3}{8}$  length of head, slightly rounded, and with scalloped membranes; the length of free portion of caudal peduncle is slightly greater than its depth, which is 4 times in length of head. Scales on body and on base of pectorals, head naked. Body somewhat elongate, and tapering posteriorly.

Colour, a light brown mottled with lighter and darker shades; sometimes with light transverse bars on sides.

A single specimen, 193 mm. in length, from Mr. Brooking, East London, who kindly supplies a note of the colour and says the fish is very common and haunts rocky places on the beach.

The specific name refers to the projecting flap on the chin.

### TRIPTERYGIUM.

Body elongate, covered with scales; snout of moderate extent. Jaws with a band of villiform teeth, and teeth on the palate. Three dorsal fins; the first two composed of spines, the third of soft rays. The second dorsal has the greater number of spines and is higher than the first, but is of less extent and not so high as the third. Ventrals jugular, composed of a hidden spine and two soft rays. Gill-opening wide.

#### TRIPTERYGIUM CAPENSE, n. sp.

Teeth, the inner and outer rows on the lower jaw and the outer row on the upper are sometimes larger than the others; a curved band on vomer and palatines. Depth of body  $3\frac{1}{2}$  to 4 times in total length excluding caudal, length of head 3 to  $3\frac{1}{2}$  times. Distance from eye to point of snout about equals diameter of eye, which is 3 to  $3\frac{1}{2}$  times in length of head; interorbital width  $\frac{3}{8}$  to  $\frac{3}{4}$  diameter of eye; depth of caudal peduncle 3 to  $3\frac{1}{5}$  times in length of head. A bunch of short filaments above each orbit, and a bunch on anterior nostril; interorbital space concave, with a ridge over each orbit; a transverse depression behind the orbits; head broad, profile rounded;

lower jaw slightly longer than upper, maxillary reaches to vertical of anterior third or middle of orbits.

Dorsal iv, xiv 10-11; the 1st dorsal commences in line with posterior margin of preoperculum, is separated from the 2nd by a space equal to about  $\frac{1}{2}$  diameter of eye, and about the same distance separates the 2nd dorsal from the 3rd; the anterior rays of 3rd dorsal are from  $\frac{1}{3}$  to  $\frac{3}{4}$  length of head, the fin is not joined to the caudal, and the rays are split. Pectorals 16; pointed, middle rays longest and about the length of the head. Ventrals 12; about  $\frac{3}{4}$  length of head. Anal 11 22; rays increasing posteriorly to about height of 3rd dorsal. Caudal  $\frac{3}{5}$  to  $\frac{1}{2}$  length of head, truncate, rays split. Scales are comparatively large and with pectinate edges; they cover also the opercles, head, upper part of orbit of eyes, snout, and bases of caudal and pectoral fins. Lateral line interrupted about in line with base of 2nd ray of 3rd dorsal.

Colour, grey with about six irregular brown bands across the body alternating with bands that only extend from the abdominal margin to median line.

Four specimens, obtained by the ss. *Pieter Faure* with the shrimp trawl in False Bay: 2 coloured grey, 53 mm. and 54 mm. in length respectively, caught about  $2\frac{1}{2}$  miles from Seal Island, in 14 fms.; 2 of a dark red colour, 47 mm. and 56 mm. long, caught in Fish Hoek Bay, in 5 fms.

The following is Mr. Regan's description of a new species of *Blennius*, alluded to in note on p. 104.

#### BLENNIUS PUNCTIFER.

Depth of body  $3\frac{2}{3}$  to 4 in the length, length of head  $4\frac{1}{3}$  to  $4\frac{2}{3}$ . Snout obtuse, with nearly vertical anterior profile. Diameter of eye  $3\frac{1}{2}$  to 4 in the length of head and twice the width of the flat interorbital region. Maxillary extending to below posterior edge of eye; very small canines in the lower jaw. On each side a short fringed nasal tentacle and a similar supra-orbital tentacle; occiput with a median series of simple filaments.

Dorsal xii 14-15, with a very slight notch, commencing above the edge of præoperculum, ending just before the caudal; spinous part as high as or a little lower than the moderately elevated soft-rayed part. Anal 17-19. Caudal sub-truncate. Pectoral extending to above origin of anal. Back with 6 more or less distinct dark cross-bars; numerous very small dark spots on head, body, dorsal

fin and base of pectoral fin; series of larger spots on caudal, anal, and distal part of pectoral; a more or less distinct dark spot or ocellus behind the first dorsal spine.

Kosi Bay, Zululand, and Port Natal (Ayres).

Three specimens, measuring up to 100 mm. in total length.

*Blennius cristatus*, Linn., is described by Cuvier and Valenciennes from the Island of Ascension as having the supra-orbital tentacles very small and simple, the anal fin with 16 rays, and the markings somewhat different.

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